

Conservation Action Planning

Biodiversity

June 2016 Summary



Southern Yorke Peninsula ("Naturally Yorke")

A Collaborative, Landscape-scale Planning Approach to Biodiversity Conservation on the Southern Yorke Peninsula, South Australia.

Compiled by:
Todd Berkinshaw, Mick Durant and Paul Koch (Greening Australia)
for the Northern and Yorke Natural Resources Management Board and
Department for Environment, Water and Natural Resources



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Contents Page

1.	Planning Context and Regional Description	5
1.1	Introduction.....	5
1.2	Regional Planning Context.....	6
1.3	The Naturally Yorke Program Area.....	8
1.4	Social Context.....	13
2.	Biodiversity Conservation Assets	15
2.1	Biodiversity Conservation Assets of the Southern Yorke Peninsula.....	16
3.	Health and Viability of Biodiversity Assets	29
3.1	Health and Viability of Biodiversity Assets	30
4.	Threats and Biodiversity Issues	33
4.1	Threats to the Conservation Assets on the Southern Yorke Peninsula.....	34
5.	Goals, Objectives and Strategies	36
5.1	Conservation Objectives of the Southern Yorke Peninsula.....	37
6.	Monitoring and Evaluation	40
7.1	Monitoring Indicators for the Southern Yorke Peninsula.....	40
7.	Research	42
7.1.	Key Knowledge Gaps.....	42
9.	Appendices	44
	Appendix 1: Flora Species of State and National Conservation Significance.....	48
	Appendix 2: Fauna Species of State and National Conservation Significance.....	50
	Appendix 3: Northern and Yorke NRM Region Goals.....	51
	Appendix 4: Participants of the Southern Yorke Peninsula CAP process 2011 - 2015.....	53
	Appendix 5: Biodiversity Conservation Projects on Southern Yorke Peninsula as at June 2012.....	54
	Appendix 6: Available CAP Resources and Recent Reports.....	56
10.	References	53

Tables

Table 1 Selected Demographic Statistics from the 2006 Census.....	13
Table 2 Key Ecological Attributes of the Conservation Assets.....	31
Table 3 Original Health and Viability Ratings.....	32
Table 4 Revised Draft Health and Viability Ratings.....	32
Table 5 Draft Threat Assessment.....	35
Table 6: Monitoring Indicators for Key Ecological Attributes (KEA) of the Conservation Assets.....	47

Maps

Map 1 CAP Sub-Regions of the Northern and Yorke NRM Board Region	7
Map 2 Naturally Yorke CAP Project Boundary	9
Map 3 Selected Threatened Species of the Southern Yorke Peninsula CAP region	12
Map 4 Property Ownership on Southern Yorke Peninsula.....	14
Map 5 Conservation Assets of the Southern Yorke Peninsula CAP region.....	17

Abbreviations

CAP	Conservation Action Planning
CP	Conservation Park
DEWNR	Department for Environment, Water and Natural Resources
IBRA	Interim Biogeographic Regionalisation of Australia
INFFER	Investment Framework for Environmental Resources
LAF	Landscape Assessment Framework
NP	National Park
NRM	Natural Resources Management
NY NRM	Northern and Yorke Natural Resources Management Board
Aus	Australia
SA	South Australia
CD	Conservation Dependent
CE	Critically Endangered
E	Endangered
V	Vulnerable
R	Rare

1. Planning Context and Regional Description

1.1. Introduction

This document summarises the current state of technical planning for biodiversity conservation under the **Naturally Yorke Conservation Program**. The planning process commenced in 2010 and has used the global Open Standards for Conservation (CMP 2015) as a basis for collaborative regional action on biodiversity issues. A complementary process for soil and water assets has been developed since 2014.

The Naturally Yorke Conservation Program is a collaboration between Natural Resources Northern and Yorke, environmental and agricultural NGOs, community groups and individuals with a vision to protect and restore the natural and productive values of the Yorke Peninsula.

This summary presents the current status of the planning process for the Southern Yorke Peninsula and incorporates refinements and improved knowledge gained from the 2015 / 2016 workshops.

Planning progress in 2015/2016 includes:

- 2 technical CAP planning meetings
- 2 Community CAP meetings (Upper Yorke and Southern Yorke)
- Major project development for a sheltered coastline / saltmarsh and wading birds project

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1. Planning Context and Regional Description

1.2 Regional Planning Context

1.2.1 Northern and Yorke Natural Resources Management (NRM) Board Region

The NRM region extends from the northern Adelaide plains in the south to the Southern Flinders Ranges in the north and includes the whole of the Yorke Peninsula. In total, the Northern and Yorke NRM region covers over 3 million hectares and supports a population of approximately 95,000 people (Northern and Yorke NRM Board 2009).

For biodiversity conservation purposes, the region has been divided into four sub-regions based primarily on ecological characteristics but also including social considerations (refer Map 1).

The Upper Yorke Peninsula and the Southern Yorke Peninsula are currently have separate groups for local project development but are treated as one region for technical planning and major project development.

Currently the 4 sub-regions are:

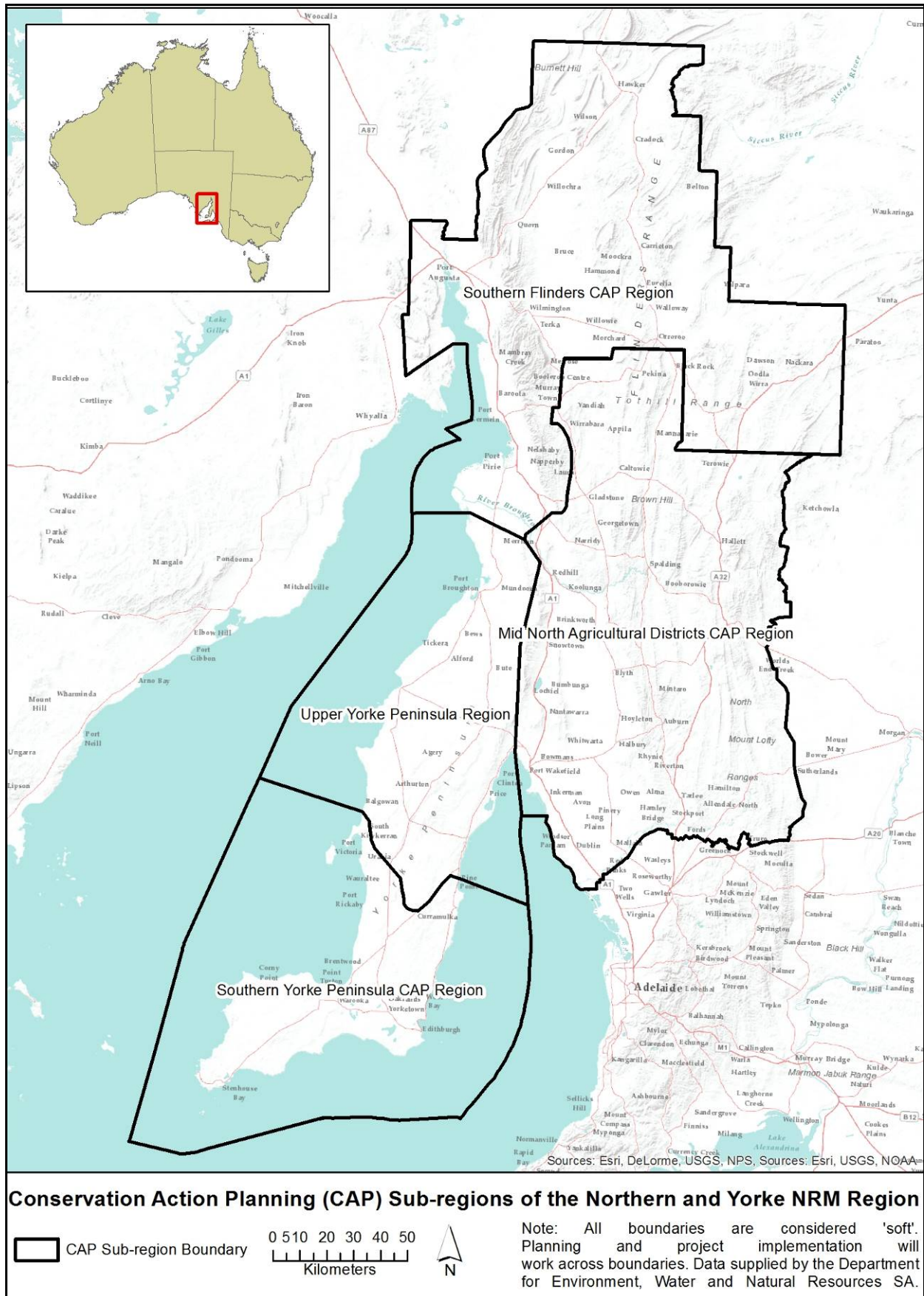
- Southern Flinders Ranges (Living Flinders)
- Mid North Agricultural Districts
- Southern Yorke Peninsula (Naturally Yorke)
- Upper Yorke Peninsula (Naturally Yorke)

1.2.2 Soil and Water Conservation

In 2014 complementary planning processes for the soil and water assets of the Northern and Yorke region were initiated and similar summary documents have been produced in 2015 and 2016 (McGregor 2016a, McGregor 2016b).

1. Planning Context and Regional Description

Map 1: Biodiversity CAP Sub-Regions of the Northern and Yorke NRM Board Region



1. Planning Context and Regional Description

1.3 The Naturally Yorke Program Area

This regional description applies to the Southern Yorke Peninsula. For a regional description of the Upper Yorke Peninsula sub-region refer to the Mid-North Agricultural Districts CAP Summary (McGregor 2016c).

The Southern Yorke Peninsula sub-region covers approximately 360,000 hectares from Innes National Park on the south-western tip of the peninsula to near Curramulka on central Yorke Peninsula (refer to Map 2). The boundary also extends to the Point Pearce community and Aboriginal Lands near Port Victoria in the north-west.

1.3.2 Regional Landforms

Regional landforms include semi-saline wetland systems in low-lying areas near Warooka and Yorketown, high-energy rugged coastlines in the south-west, low-energy cliffs and dunes on the east and upper west coast and undulating to low hilly plains throughout inland areas. No part of the peninsula is more than 20km from the coast.

1.3.3 Climate and Rainfall

The area is subject to typical Mediterranean climatic conditions with mild wet winters and hot dry summers. Rainfall is highest on the SW foot with (mean annual rainfall of 434mm at Stenhouse Bay) and on the higher elevations of the leg. Edithburgh receives a mean annual rainfall of 359mm and Warooka 446mm (BOM 2011).

1.3.4 The Narungga People

The project area is the traditional country of the Narungga people. The following is an excerpt from a poster located at Point Pearce (author unknown):

‘The Narungga country once extended as far north as Port Broughton and east to the Hummock Ranges. Their neighbours were the Kaurna of the Adelaide Plains and the Nukunu to the north, with whom the Narungga would meet for trade and ceremony. The Narungga nation was made up of four clans, the Kurnara in the north of the peninsula, Windera in the east, Wari in the west and Dilpa in the south.

The Narungga managed and preserved their lands. They used fire to clear old grasses and promote fresh plant growth. Fresh water rockholes were covered with slabs of stone or brushwood to keep the water clean and to prevent animals from drinking from them. Trackways were maintained through thick mallee forests, linking places and people throughout the peninsula.’

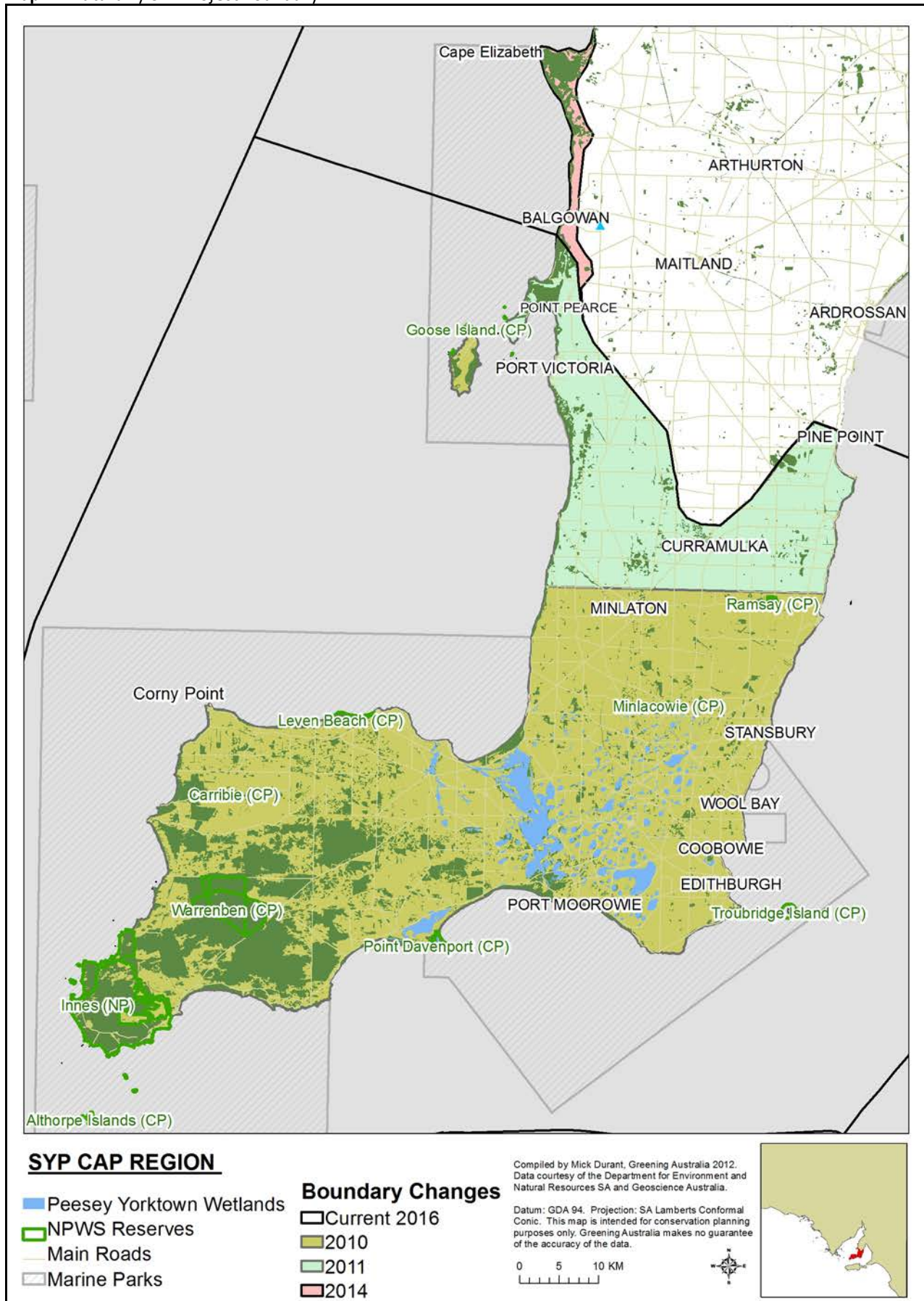
For further reading D.L. & S.J Hill (1975) have collated an excellent history of the tribes based on what little was documented, and they describe many locations of particular significance for Narungga people.

1.3.5 European Land Use History

Livestock grazing (predominantly sheep) began in the mid-nineteenth century near the township of Stansbury. The first formal pastoral leases occurred in 1851 and by 1865 extended over virtually the entire ‘foot’ of the peninsula and up the western side of the ‘leg.’ As with most agricultural regions the rate of land clearance increased dramatically after 1927 with advances in agriculture relating to an improved understanding of trace elements and the development of fertilisers (DEH 2003).

1. Planning Context and Regional Description

Map 2: Naturally CAP Project Boundary



1. Planning Context and Regional Description

Mining of gypsum began at Marion Bay in 1889 and at Stenhouse Bay from 1913, continuing until around 1973 (DEH 2003). Other mining activities included sand mining on Wardang Island, guano mining in the caves on Althorpe Island and the burning of lime at Stansbury.

1.3.6 Native Vegetation

The south-west of the peninsula contains extensive areas of sub-coastal mallee dominated by Coastal White Mallee (*Eucalyptus diversifolia* +/- *Eucalyptus rugosa*) interspersed with woodland formations of Mallee Box (*Eucalyptus porosa*), Drooping Sheoak (*Allocasuarina verticillata*) and Dryland Tea-tree (*Melaleuca lanceolata*). Native vegetation cover is relatively high in the south-west with the Innes IBRA Association boundary retaining approximately 52% native vegetation cover.

Typical plant communities found along the high energy coasts are low shrublands on exposed rocky cliffs dominated by Pale Turpentine Bush (*Beyeria lechenaultii*), Coast Velvet-bush (*Lasiopetalum discolor*), Cushion Bush (*Leucophyta brownii*) and Cushion Fan-flower (*Scaevola crassifolia*), and coastal dune shrublands dominated by Coast Daisy-bush (*Olearia axillaris*), Coastal Beard-heath (*Leucopogon parviflorus*), Wattle species (*Acacia spp*) and Common Boobialla (*Myoporum insulare*). Rear dunes generally support open woodlands dominated by Drooping Sheoak (*Allocasuarina verticillata*) and Dryland Tea-tree (*Melaleuca lanceolata*) over coastal shrubs.

Inland wetlands and saline lakes are dominated by samphire shrublands or Swamp Paperbark forests (*Melaleuca halimiflorum*), occasionally with Cutting Grass (*Gahnia filum*) sedgelands on less saline ground. Native vegetation cover is largely absent from the wetland systems around Yorketown (the Yorketown Lakes).

The 'leg' of the peninsula contains highly fragmented vegetation remnants of Mallee Box (*Eucalyptus porosa*), Drooping Sheoak (*Allocasuarina verticillata*) and Dryland Tea-tree (*Melaleuca lanceolata*) woodlands. Fragmented mallee associations include Ridge-fruit Mallee (*Eucalyptus incrassata*) with a shrubby understorey on deep sands, and mixed mallee associations on loams and shallow limestone soils. The 'leg' of the peninsula within the Southern Yorke IBRA Sub-region retains only 18% native vegetation cover.

Threatened Plant Species

Spatial database records managed by DEWNR show 75 plant species of national or state conservation significance within the project area (refer Appendix 1). Fourteen species are listed as nationally rare, vulnerable or endangered.

A regional species risk assessment (Gillam & Urban 2008) recorded 659 native vascular plant species within the Southern Yorke IBRA subregion with **21 species (3%) Critically Endangered, 43 species (6%) Endangered, 62 species (9%) Vulnerable and 141 species (21%) considered Rare**. Approximately 10% of these species were assessed to be definitely decreasing in abundance and / or distribution and 31% as probably decreasing.

Species of note include a number of threatened orchids (eg. *Caladenia brumalis*, *C. macroclavia*, *C. conferta*, *C. intuta*, *Prasophyllum goldsackii*), two nationally threatened wattle species (*Acacia rhetinocarpa*, *A. enterocarpa*), Silver Daisy-bush (*Olearia pannosa ssp pannosa*), Annual Candles (*Stackhousia annua*) and a number of swamp-associated species including Bead Samphire (*Tecticornia flabelliformis*) and Silver Candles (*Pleuropappus phyllocalymmeus*).

1. Planning Context and Regional Description

1.3.7 Fauna

The south-western tip of the Yorke Peninsula is a refuge area for many mammal, bird and reptile species which are declining or have disappeared from elsewhere in southern South Australia. However, as in other parts of the state there has been a dramatic decline in terrestrial mammal species. In an analysis of sub-fossil material, Graham Medlin (2011) identified that of the 24 species of mammal that have inhabited the peninsula in recent times, at least 18 species have become extinct. The main causes of the decline include habitat clearance and the introduction of foxes, cats and rabbits.

Remaining terrestrial mammal species include the Western Grey Kangaroo (*Macropus c.f. fuliginosus*), Brushtail Possum (*Trichosaurus vulpecula*), Western Pygmy Possum (*Cercartetus concinnus*), Southern Hairy-nosed Wombat (*Lasiorhinus latifrons*), Fat-tailed Dunnart (*Sminthopsis crassicaudata* - status uncertain) and Short-beaked Echidna (*Tachyglossus aculeatus* - status uncertain). Australian Sea-lion (*Neophoca cinerea*) colonies can also be found on the coast. Other notable fauna species include the re-introduced Tamar Wallaby (*Macropus eugenii*) within Innes National Park and on Wardang Island, and the Rosenbergs and Sand Goannas (*Varanus rosenbergi*, *V. gouldii*).

Notable bird species include the nationally threatened Mallee Fowl (*Leipoa ocellata*), Plains-wanderer (*Pedionomus torquatus*), eastern subspecies of the Western Whipbird (*Psophodes nigrogularis* ssp. *leucogaster*) and a large range of coastal birds including the White-bellied Sea-eagle (*Haliaeetus leucogaster*), many migratory waders and Little Penguin (*Eudiptula minor*) colonies on Wardang Island.

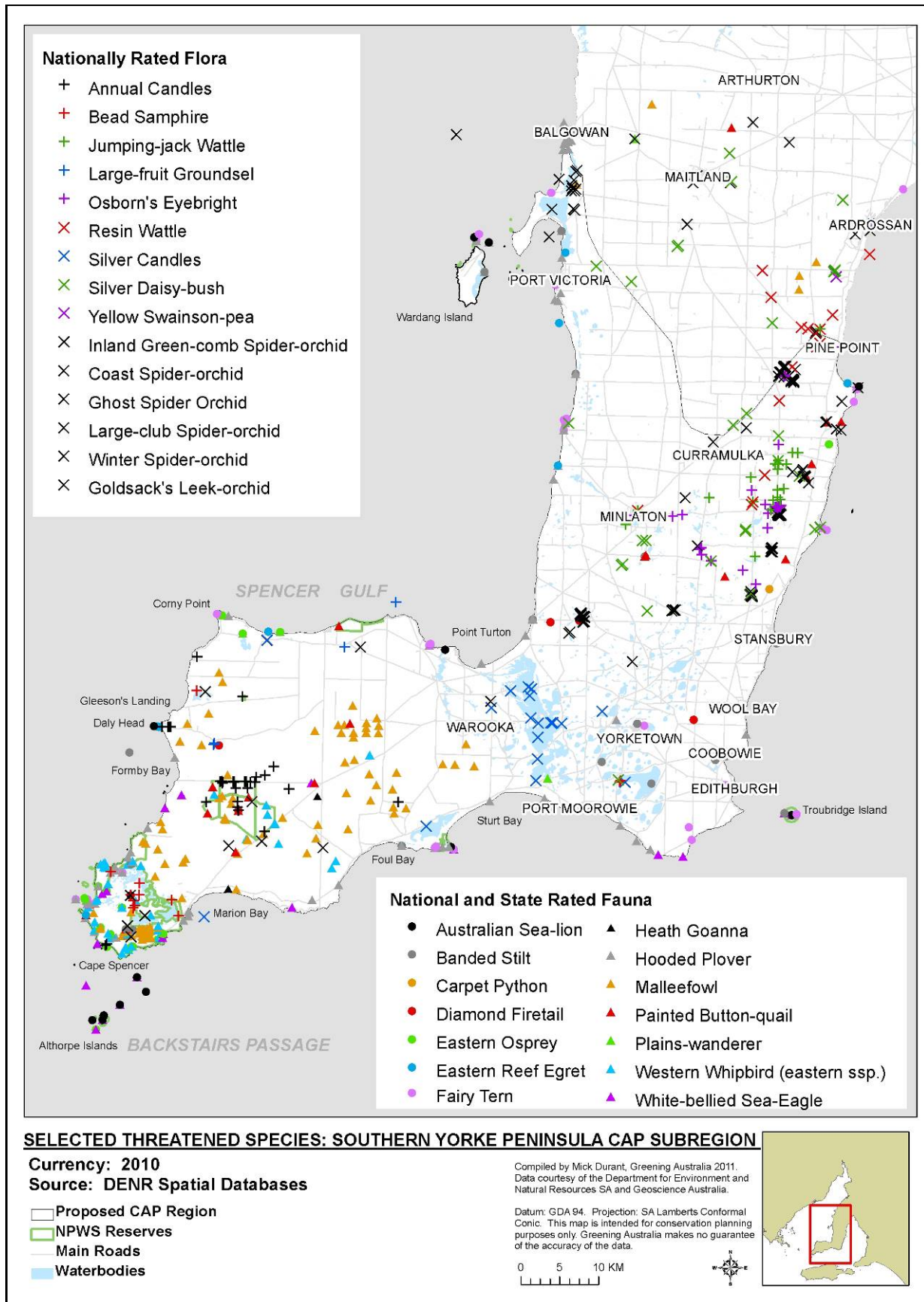
Threatened Fauna

Spatial database records managed by DEWNR show 14 mammal, bird and reptile species of national or state conservation significance within the project area (refer Appendix 2). Four species are listed as nationally threatened including the Malleefowl, eastern subspecies of the Western Whipbird, Australian Sea-lion and Plains Wanderer.

Gillam & Urban (2008) recorded 258 species (including marine mammals and freshwater fish) in the Southern Yorke IBRA subregion with **7 species (3%) Critically Endangered, 24 species (9%) Endangered, 28 species (11%) Vulnerable and 68 species (26%) considered Rare**. Approximately 8% of these species were assessed to be definitely decreasing in abundance and/or distribution and 35% as probably decreasing.

1. Planning Context and Regional Description

Map 3: Selected Threatened Species Records: Southern Yorke Peninsula CAP region



1. Planning Context and Regional Description

1.4 Social Context

1.4.1 Population

The project area encompasses the main population centres of Minlaton, Stansbury, Edithburgh, Yorketown and Warooka and a number of smaller settlements such as Marion Bay, Corny Point and Coobowie. Minlaton is the largest town in terms of population with 774 people registered in the 2006 census, followed by Yorketown with 685 and Stansbury with 522.

The total resident population of the project area is difficult to determine however it can be estimated to be between 7,000 and 8,000 people based on the Bureau of Statistics 2006 census data. The Yorke Peninsula Local Government Area which extends to the top of Yorke Peninsula recorded a population of 11,190 people in 2006 with 1009 people identifying sheep, beef cattle and / or grain farming as their main occupation (24.4% of the workforce).

Southern Yorke Peninsula also supports a substantial non-resident population including absentee landholders (eg. holiday house owners) and tourists. The tourism industry is based on coastal recreation activities such as fishing, camping, boating and surfing.

Table 1: Selected Demographic Statistics from the 2006 Census

Location	Population	Labour Force	Labour Force involved in Farming Activities	% Involved in Farming Activities
Yorke Peninsula (LGA)	11,190	4,363	1009	24.4%
Minlaton (State Suburb)	774	290	22	7.9%
Stansbury (State Suburb)	522	153	10	6.8%
Edithburgh (State Suburb)	512	182	19	11.7%
Warooka (State Suburb)	247	102	20	22%
Yorketown (Urban Locality)	685	300	30	10%

1.4.2 Landholdings

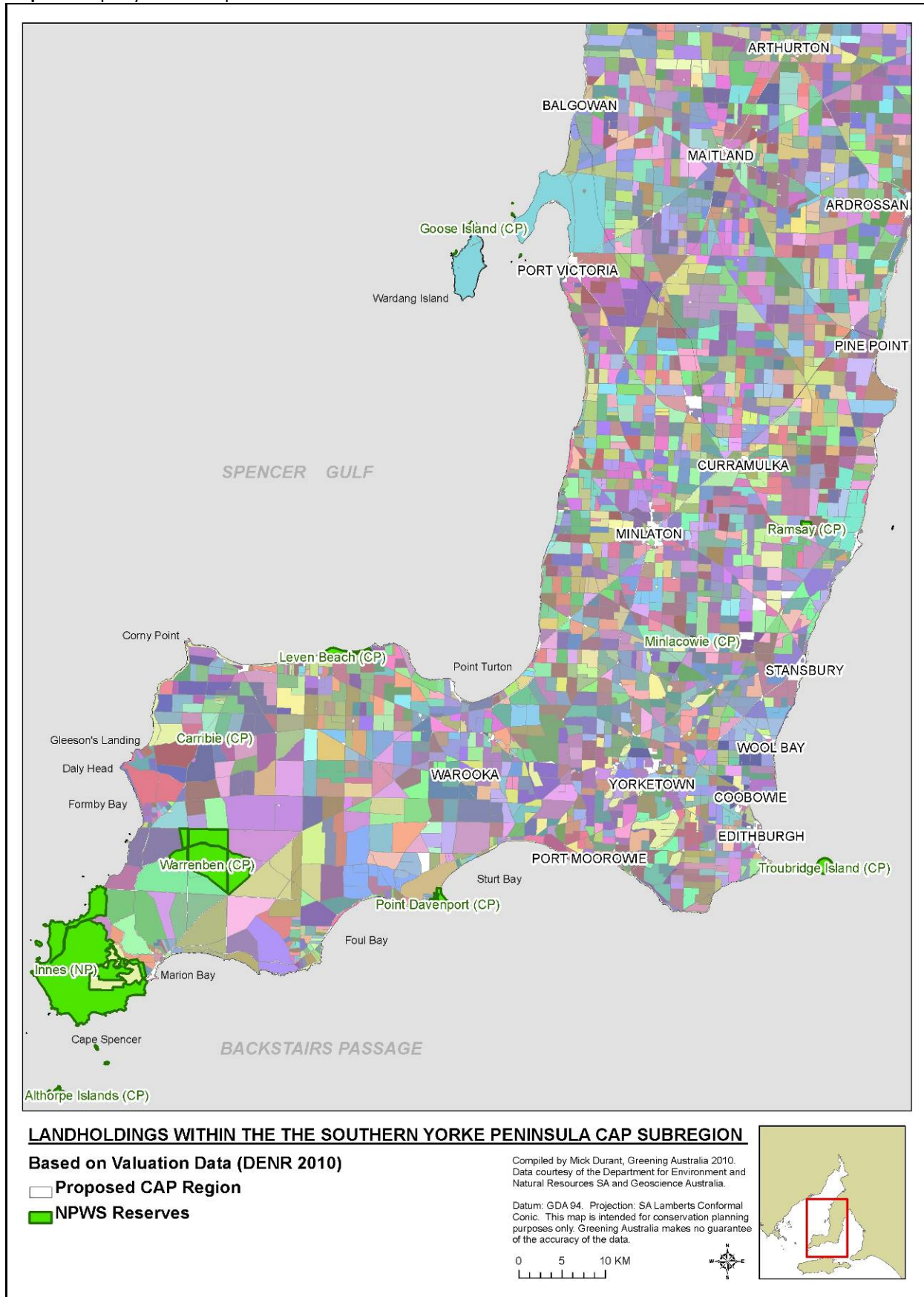
Rural landholdings are generally of moderate or small size with few farms exceeding 5,000 hectares. There is increasing subdivision with lifestyle blocks becoming common on the 'foot' of the peninsula, many of which are owned by absentee landholders from towns to the north or from Adelaide. Map 4 gives an indication of relative property sizes.

Key landholders in the region include the Minister for Environment and Conservation (Department for Environment, Water and Natural Resources), District Council of Yorke Peninsula, Aboriginal Lands Trust (ALT) and Narungga Nation Aboriginal Corporation (Point Pearce). There are few large corporate landholders although mining operations are increasing in the region.

For further information, a recent survey and report by the University of South Australia (Raymond & Weber 2014) gives a good overview of landholder attitudes to farming, environment and carbon sequestration on SYP (see Appendix 6).

1. Planning Context and Regional Description

Map 4: Property Ownership on Southern Yorke Peninsula



Biodiversity Conservation Assets

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2. Biodiversity Conservation Assets

2.1. Biodiversity Conservation Assets

The Naturally Yorke group reviewed the asset definitions in June 2016 and decided to lump together the high energy coastal assets, including offshore islands. It was felt that the coast should be viewed in a more holistic manner to reflect the way that projects are likely to be developed.

- 1.** High Energy Coasts and Islands
- 2.** Low Energy Coastlines
- 3.** Inland Wetlands
- 4.** Sub-coastal Mallee Communities
- 5.** Relictual Mallee Communities
- 6.** Open Woodlands
- 7.** Southern Hairy-nosed Wombat
- 8.** Small Mammals

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2. Biodiversity Conservation Assets

2.1.1 High Energy Coasts and Islands

High energy coastal dunes and sandy beaches occur on the south-western tip of the peninsula where the coast is exposed to the open waters of the Southern Ocean. Important areas include the tall dune systems around Formby Bay and the beach and dune systems within Innes National Park and Marion Bay. Notable fauna include threatened shorebirds and seabirds such as the state vulnerable Hooded Plover (*Thinornis rubricollis*) and state endangered Fairy Tern (*Sternula nereis*).

High energy coastal cliffs predominantly occur on the south-western tip of the peninsula. These coasts are characterised by low coastal shrublands on top of medium-height cliffs with a rocky intertidal zone at the base. Notable fauna include the White-bellied Sea-eagle (*Haliaeetus leucogaster*) and Osprey (*Pandion cristatus*) which nest along the cliffs, marine mammals such as the Australian Sea-lion (*Neophoca cinerea*) and a range of migratory shorebirds. Important locations include Corny Point, Innes National Park and Foul Bay.

Islands in this asset include Wardang Island and Goose Island off the west coast of the peninsula, the Althorpe Islands group off the south-western tip of the peninsula and Troubridge Island off the south-eastern coast near Edithburgh (the only sand island), and the small nearshore islands of Innes National Park.



2. Biodiversity Conservation Assets

Nested Assets: High Energy Coasts and Islands		AUS	SA
PLANT COMMUNITIES	Coastal Dune Shrublands (e.g. <i>Olearia axillaris</i> , <i>Leucopogon parviflorus</i>)		
PLANT COMMUNITIES	Drooping Sheoak (<i>Allocasuarina verticillata</i>) Woodlands on rear dunes		
PLANT COMMUNITIES	Coastal Cliff Shrublands (e.g. <i>Lasiopetalum discolor</i> , <i>Leucophyta brownii</i>)		
KEY HABITAT AREAS	Inter-tidal rocky areas, cliffs, outcrops, cavities & caves (roosting & nesting)		
KEY HABITAT AREAS	Sandy beaches (Troubridge Island), tidal flats (eastern side of Wardang), rocky shores and cliffs (Althorpe Island, Innes NP Islands)		
MARINE MAMMALS	NZ Fur-seals (<i>Arctocephalus forsteri</i>) – haul out area Australian Sea Lion (<i>Neophoca cinerea</i>) – haul out area	VU	V
BIRD ASSEMBLAGE	Shorebirds – e.g. Hooded Plover, Red-capped Plovers, Sanderling, Ruddy Turnstone, Sooty Oystercatchers Seabirds – e.g. Little Penguins, Terns, Woodland birds – e.g. Golden Whistler, Wrens		
REPTILE ASSEMBLAGE	Death Adder, Sand Goanna, Rosenberg Goannas, Skinks, Geckos, Tiger Snakes		
MAMMAL ASSEMBLAGE	Tamar Wallaby (reintroduced to Wardang Island)	VU	V
THREATENED BIRDS	Hooded Plover (<i>Thinornis rubricollis</i>) Fairy Tern (<i>Sternula nereis</i>) White-bellied Sea Eagle (<i>Haliaeetus leucogaster</i>)- feeding area Osprey (<i>Pandion cristatus</i>) -feeding area Peregrine Falcon (<i>Falco peregrinus</i>) Rock Parrot (<i>Neophema petrophila</i>)		V E E E R R
INVERTEBRATES	Marine invertebrates on rocky inter-tidal areas		
KEY LOCATIONS	Innes National Park, Corny Point, Pt Yorke, Gleasons Landing, Cape Elizabeth, Browns Beach, Marion / Formby Bay, Pt Davenport - Pt Moorowie		
KEY LOCATIONS	Innes NP, , Pandalowie, Troubridge Islands, Althorpe Island, Innes N.P. Islands, Wardang Island, Goose Island		

2. Biodiversity Conservation Assets

2.1.2 Low Energy Coasts

Low energy sheltered coastlines are characterised by low sand dune complexes, beach and tidal flats, sand spits and sheltered bays and inlets. Important locations include the coastal inlets of Point Davenport and Coobowie and the low cliffs and dunes on the eastern and western side of the 'leg' of the peninsula. Important habitat is provided for migratory shorebirds on tidal flats and for small raptors on low cliffs.



Nested Assets: Low Energy Coasts		AUS	SA
PLANT COMMUNITIES	Coastal Dune Shrublands (e.g. <i>Olearia axillaris</i> , <i>Leucopogon parviflorus</i>) Temperate Coastal Saltmarsh Communities	V	
KEY HABITAT AREAS	Sand spits, sand and mud flats, low cliffs, inter-tidal Samphire, sheltered bays and inlets, fish breeding areas, particularly the east coast of the Peninsula and around Point Pearce on the western coast		
BIRD ASSEMBLAGE	Shorebirds – e.g. Pied Oystercatchers, Eastern Reef Egret, Little Penguin, Other Migratory Shorebirds, Waterbirds – e.g. Pelicans, Black Swans, Cormorants, Teal Ducks, Raptors - Peregrine Falcons		
REPTILE ASSEMBLAGE	Whip Snakes		
INVERTEBRATES	Razorfish, Crabs, Oysters, etc		
THREATENED BIRDS	Hooded Plover (<i>Thinornis rubricollis</i>)		V
KEY LOCATIONS	Pt Davenport, Hardwicke Bay, Coobowie, Stansbury - Port Vincent, leg of Yorke Peninsula		

2. Biodiversity Conservation Assets

2.1.3 Inland Wetlands

Inland wetlands on the Peninsula are generally saline systems which are separated from the coast, although a number of hydrological systems are involved.

The Peesey Swamp system between Warooka and Yorketown is at or below sea level and maintains some sub-surface tidal connection, as well as a substantial surface drainage system from the eastern side. The vegetation of this system is generally characterised by low samphire shrublands with occasional Salt Paperbarks, *Gahnia filum* sedgelands on less salty ground and open Tea-tree and Sheoak woodlands in the surrounding better soils.

The Yorketown lakes are a system of numerous crater-like salt lakes which often have local surface drainage and may also be fed by localised aquifers or sub-surface lenses. Few of these lakes retain natural vegetation. The saline lakes of Innes National Park however are well vegetated with Swamp Paperbark (*Melaleuca halmaturorum*) over Thatching Grass (*Gahnia filum*) sedgelands and low samphire shrublands.

Threatened plant species of the saline lake systems include the nationally vulnerable Bead Samphire (*Tecticornia flabelliformis*) and Silver Candles (*Pleuropappus phyllocalymmeus*).

Historically fresh water wetlands also occur such as the red gum woodlands of Gum Flat near Minlaton, and 'The Drain' between Warooka and Corny Point.



2. Biodiversity Conservation Assets

Nested Assets: Inland Wetlands		AUS	SA
PLANT COMMUNITIES	Salt Paperbark (<i>Melaleuca halmaturorum</i>) Forests		
PLANT COMMUNITIES	Thatching Grass (<i>Gahnia filum</i>) Sedgelands		V
PLANT COMMUNITIES	Samphire Low Shrublands		
PLANT COMMUNITIES	Red Gum (<i>Eucalyptus camaldulensis</i>) Woodlands at Gum Flat		
BIRD ASSEMBLAGE	Shorebirds – e.g. Stints, Avocets, Dotterels, Sharp-tailed Sandpiper, Curlew Sandpiper, White-fronted Chats, Wood Sandpiper, Banded Stilt, Waterbirds – e.g. Ducks, Cape Barren Geese		
INVERTEBRATES	Yellowish Sedge-skipper butterfly (in Thatching Grass), Brine Shrimp		
THREATENED PLANTS	Bead Samphire (<i>Tecticornia flabelliformis</i>) Silver Candles (<i>Pleuropappus phyllocalymmeus</i>) Salt Isotome (<i>Isotoma scapigera</i>)	VU VU	V V R
OTHER ATTRIBUTES	Stromatolites (in Innes National Park), Freshwater soaks		
KEY LOCATIONS	Peeseey Swamps, The Drain, Innes N.P., Gum Flat, Lake Fowler, Yorketown, Thidna CP, Pt Davenport, Corny Point freshwater soaks		

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2. Biodiversity Conservation Assets

2.1.4 Sub-coastal Mallee Communities

Sub-coastal mallee (*Eucalyptus diversifolia* &/or *E. rugosa*) is the dominant vegetation type on the south-west of the peninsula. It occurs on soils which are unsuitable for agriculture and therefore has not been extensively cleared. The vegetation is low and dense and supports a range of notable fauna including the Western Pygmy Possum, Mallee Fowl and Western Whipbird. This conservation asset is well protected within the formal reserve system including Innes National Park, Warrenben Conservation Park and adjacent Heritage Agreements.



Nested Assets: Sub-coastal Mallee Communities		AUS	SA
PLANT COMMUNITIES	Coastal Mallee (<i>Eucalyptus diversifolia</i> , <i>E. rugosa</i>)		
MAMMAL ASSEMBLAGE	Western Pygmy Possum, Tamar Wallaby (reintroduced), Western Grey Kangaroo, Bats, Echidnas		
BIRD ASSEMBLAGE	Declining Woodland Birds – e.g. Scrub Robin, Golden Whistler, Bronzewing, Purple-gaped Honeyeater, Scarlet Robin, Shy Heath-wren, Spotted Pardalote, Painted Button-quail, Spotted Nightjar		
REPTILE ASSEMBLAGE	Heath Goanna (<i>Varanus rosenbergi</i>)		V
THREATENED BIRDS	Mallee Fowl (<i>Leipoa ocellata</i>)	VU	V
	Western Whipbird (<i>Psophodes nigrogularis leucogaster</i>)	VU	E
	Bush Stone Curlew (<i>Burhinus grallarius</i>)		R
THREATENED PLANTS	Orchids (e.g. <i>Caladenia brumalis</i> , <i>Prasophyllum goldsackii</i>)	E/V	E/V
KEY LOCATIONS	Innes National Park, Warrenben Conservation Park, Heritage Agreements		

2. Biodiversity Conservation Assets

2.1.5 Relictual Mallee Communities

Relictual mallee communities occur on the 'leg' of the peninsula and are comprised of two relatively distinct habitat types: the first being open mallee formations on loamy calcareous soils (eg. *Eucalyptus gracilis*, *E. oleosa*, *E. socialis*) and the second being shrubby mallee habitats on deep sands (*E. incrassata*). Threatened plant species include Jumping Jack Wattle (*Acacia enterocarpa*), Resin Wattle (*Acacia rhotinocarpa*), Silver Daisy Bush (*Olearia pannosa*) and numerous orchid species. Threatened fauna include a range of declining mallee birds.



Nested Assets: Relictual Mallee Communities		AUS	SA
PLANT COMMUNITIES	Mallee Communities on plains (<i>Eucalyptus gracilis</i> , <i>E. oleosa</i> , <i>E. socialis</i>)		
PLANT COMMUNITIES	Sand Mallee Communities (<i>Eucalyptus incrassata</i>)		
PLANT COMMUNITIES	Yacca (<i>Xanthorrhoea semiplana</i>) Shrubland at Stansbury		
MAMMAL ASSEMBLAGE	Western Grey Kangaroo, Bats, Echidnas		
REPTILE ASSEMBLAGE	Goannas		
THREATENED BIRDS	Southern Scrub Robin (<i>Drymodes brunneopygia</i>) Shy Heath Wren (<i>Calamanthus cautus</i>)		R
THREATENED PLANTS	Jumping Jack Wattle (<i>Acacia enterocarpa</i>) Resin Wattle (<i>Acacia rhotinocarpa</i>) Silver Daisy Bush (<i>Olearia pannosa</i>) Orchids (<i>Caladenia macroclavia</i> , <i>C. brumalis</i> , <i>Prasophyllum goldsackii</i>)	EN VU VU E/V	E V V E/V
KEY LOCATIONS	Ramsay Conservation Park		

2. Biodiversity Conservation Assets

2.1.6 Open Woodlands

Open woodlands on the Peninsula are generally dominated by Mallee Box (*Eucalyptus porosa*) and Drooping Sheoak (*Allocasuarina verticillata*), usually over an open sedge layer with a diverse herbaceous component, or with a prominent shrub layer (eg. *Bursaria spinosa*) over a grass and sedge ground-cover.

Open woodlands also occur with Dryland Tea-tree (*Melaleuca lanceolata*) as a dominant overstorey, particularly on shallow limestone soils. These Tea-tree woodlands generally support a degraded and simplified grassy ground-layer with few remaining shrubs. A small area of Sugarwood (*Myoporum platycarpum*) open woodland over Sheepbush (*Geijera liniarifolia*) with a sedge, grass and herb layer Point Pearce occurs around Port Victoria.

Open woodlands were once contiguous from Corny Point across the northern part of the 'foot' and up the western 'leg' of the peninsula and were targeted for grazing by the early pastoralists. They are now highly fragmented with the largest areas remaining between Innes National Park and Warrenben Conservation Park and near Minlaton, Curramulka and Port Vincent.

Open woodlands provide critical habitat for range of declining woodland birds (eg. Diamond Firetail) and many threatened plant species including Silver Daisy Bush (*Olearia pannosa* ssp. *pannosa*), Osbornes Eyebright (*Euphrasia collina* ssp. *osbornii*) at least 5 nationally threatetened orchids.



2. Biodiversity Conservation Assets

Nested Assets: Open Woodlands		AUS	SA
PLANT COMMUNITIES	Drooping Sheoak (<i>Allocasuarina verticillata</i>) Woodlands		
PLANT COMMUNITIES	Mallee Box (<i>Eucalyptus porosa</i>) Woodlands		
PLANT COMMUNITIES	Dryland Tea-tree (<i>Melaleuca lanceolata</i>) Woodlands		
PLANT COMMUNITIES	Black Grass (<i>Gahnia lanigera</i>), Sword-Sedge (<i>Lepidosperma sp.</i>) Sedgelands		
MAMMAL ASSEMBLAGE	Western Grey Kangaroos, Brushtail Possums, Bats, Echidnas		
BIRD ASSEMBLAGE	Declining Woodland Birds – Hooded Robin, Crested Bellbird, Jacky Winter, Dusky Woodswallow, Sittella, Bushlarks, Horsefield'ss Bronze Cuckoo, Restless Flycatcher, Crested Bellbird, Scarlett Robin, Painted Button-quail		
REPTILE ASSEMBLAGE	Rosenberg Goanna, Snakes		
THREATENED BIRDS	Diamond Firetail (<i>Stagonopleura guttata</i>) Bush Stone Curlew (<i>Burhinus grallarius</i>)		V R
THREATENED PLANTS	Silver Daisy Bush (<i>Olearia pannosa ssp pannosa</i>), 5 nationally threatened orchids (<i>Caladenia macroclavia</i> , <i>C. brumalis</i> , <i>C. intuta</i> , <i>Prasophyllum goldsackii</i> , <i>P. praecox</i>)	VU E/V	V E/V
KEY LOCATIONS	Innes NP, Warrenben CP, Ramsey CP, Pt Moorowie, Brentwood Cemetery, Stansbury, Daly Head, Kangaroo Flat, Minbura Reserve		

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2. Biodiversity Conservation Assets

2.1.7 Southern Hairy-nosed Wombat

Southern Hairy-nosed Wombat (*Lasiorchinus latifrons*) populations are considered at risk of serious decline on the Yorke Peninsula with only 640 individuals from 24 colonies estimated to remain in 2010 (Taggart & Sparrow 2010). Of the 24 colonies remaining, 21 were estimated to have less than 20 individuals. The most significant population in the Southern Yorke Peninsula region occurs from Waraltee to Point Pearce in the north-west of the region.

Wombats are highly interactive with their environment and they perform important soil turn-over functions. As such there is scope for reintroduction and translocations for multiple benefits.



Nested Assets: Southern Hairy-nosed Wombat		AUS	SA
TOTAL POPULATION	Approximately 640 individual wombats		
COLONIES	24 colonies on Southern Yorke Peninsula		
KEY LOCATIONS	Central-western leg of Yorke Peninsula, Point Pearce		

2. Biodiversity Conservation Assets

2.1.8 Small Mammals

Small to medium-sized mammals are vulnerable to predation by foxes and cats and have largely disappeared from southern South Australia. Sub-fossil records indicate that 18 small mammal species have become locally extinct on the Southern Yorke Peninsula including Bandicoots, Bilbies, Dunnarts, Phascogales, Bettongs and Potoroos. Mammal species still present include Western Pygmy Possums, Brushtail Possums, Southern Hairy-nosed Wombats, Western Grey Kangaroos Echidnas and bats. The Tammar Wallaby has been re-introduced to Wardang Island and has also recently been reintroduced to Innes National Park from populations that were historically introduced to New Zealand.



Nested Assets: Small Mammals		AUS	SA
EXTANT SMALL MAMMALS	Western Pygmy Possum (<i>Cercartetus concinnus</i>) Brushtail Possum (<i>Trichosurus vulpecula</i>) Tammar Wallaby (<i>Macropus eugenii</i>) Echidna (<i>Tachyglossus aculeatus</i>) Bats		R CD
EXTANT LARGE MAMMALS	Western Grey Kangaroo (<i>Macropus fuliginosus</i>) Southern Hairy-nosed Wombat (<i>Lasiiorhinus latifrons</i>)		
REINTRODUCED	Tammar Wallaby (<i>Macropus eugenii</i>)		CD
LOCALLY EXTINCT	2 Bandicoot species (*Sth Brown, Western-barred)		
LOCALLY EXTINCT	1 Bilby species		
LOCALLY EXTINCT	2 Dunnart species (*Grey-bellied, *Fat-tailed)		
LOCALLY EXTINCT	*Red-tailed Phascogale		
LOCALLY EXTINCT	2 Bettong species (*Burrowing, *Brushtailed)		
LOCALLY EXTINCT	Broad-faced Potoroo		
LOCALLY EXTINCT	2 Hare-Wallabies (Banded, Eastern)		
LOCALLY EXTINCT	4 Native Mice (*Mitchells Hopping, *Plains, Goulds, *Western)		
LOCALLY EXTINCT	4 Native Rats (*Heath, *Bush, Pale Field, *Greater Stick-nest)		
KEY LOCATIONS	Innes National Park, Wardang Island		

Health and Viability of Biodiversity Assets

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3. Health and Viability of Biodiversity Assets

3.1. Health and Viability of Biodiversity Assets

The overall health and viability of the conservation assets was determined by identifying and rating the current status of the key ecological attributes of each conservation asset based on considerations of size, condition and landscape context (refer Table 2).

The assessments were supported by existing monitoring data for some key ecological attributes and in other cases were based on local expert opinion. The absence of quantitative data for assessing the viability of many key ecological attributes highlights a gap in the existing biodiversity monitoring program and is an area for future development.

Table 3 shows the viability ratings from 2015 while Table 4 is a draft revision based on the discussions at the June CAP meeting.

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3. Health and Viability of Biodiversity Assets

Table 2: Key Ecological Attributes of the Conservation Assets

Conservation Asset	Landscape Context Key Ecological Attributes	Condition Key Ecological Attributes	Size Key Ecological Attributes
1. High Energy Coasts and Islands	<ul style="list-style-type: none"> ● connectivity to adjacent vegetation communities ● natural dune formation processes 	<ul style="list-style-type: none"> ● fauna diversity & abundance ● flora diversity & composition ● seabird / shorebird diversity (islands) ● terrestrial birds / mammals diversity & abundance (islands) 	<ul style="list-style-type: none"> ● total area remaining ● vegetation cover remaining (islands)
3. Low Energy Sheltered Coastlines	<ul style="list-style-type: none"> ● connectivity to adjacent vegetation communities ● tidal deposition patterns 	<ul style="list-style-type: none"> ● fauna diversity & abundance ● flora diversity & composition ● water quality 	<ul style="list-style-type: none"> ● total area remaining
4. Inland Wetlands	<ul style="list-style-type: none"> ● connectivity to adjacent vegetation communities ● hydrological regime 	<ul style="list-style-type: none"> ● fauna diversity & abundance ● flora diversity & composition ● water quality 	<ul style="list-style-type: none"> ● total area remaining
5. Sub-coastal Mallee Communities	<ul style="list-style-type: none"> ● patch size, shape and configuration 	<ul style="list-style-type: none"> ● fauna diversity & abundance ● flora diversity & composition 	<ul style="list-style-type: none"> ● total area remaining
6. Relictual Mallee Communities	<ul style="list-style-type: none"> ● patch size, shape and configuration 	<ul style="list-style-type: none"> ● fauna diversity & abundance ● flora diversity & composition 	<ul style="list-style-type: none"> ● total area remaining
7. Open Woodlands	<ul style="list-style-type: none"> ● patch size, shape and configuration 	<ul style="list-style-type: none"> ● fauna diversity & abundance ● flora diversity & composition 	<ul style="list-style-type: none"> ● total area remaining
9. Southern Hairy-nosed Wombat	<ul style="list-style-type: none"> ● genetic diversity ● habitat availability 	<ul style="list-style-type: none"> ● health of population ● reproduction success 	<ul style="list-style-type: none"> ● total population size ● number / size of colonies
10. Small Mammals	<ul style="list-style-type: none"> ● genetic diversity ● habitat availability 	<ul style="list-style-type: none"> ● viability (health) of extant small mammal population ● habitat suitability / condition 	<ul style="list-style-type: none"> ● small mammal species diversity (compared to pre-European diversity)

Note: Status of Key Ecological Attributes - **Poor**, **Fair**, **Good**

3. Health and Viability of Biodiversity Assets

Table 3: Original Health and Viability Ratings

	Conservation Asset	Landscape Context	Condition	Size	Overall Viability
1	High Energy Coastal Dunes & Sandy Beaches	Fair	Fair	Good	Fair
2	High Energy Coastal Cliffs & Rocky Shorelines	Good	Fair	Good	Good
3	Low Energy Sheltered Coastlines	Poor	Poor	Fair	Poor
4	Offshore Islands	-	Fair	Fair	Fair
5	Inland Wetlands	Poor	Poor	Good	Fair
6	Sub-coastal Mallee Communities	Good	Fair	Good	Good
7	Relictual Mallee Communities	Poor	Poor	Poor	Poor
8	Open Woodlands (Sheoak, Mallee Box, Dryland Tea-tree)	Fair	Poor	Poor	Poor
9	Southern Hairy-nosed Wombat	Poor	Poor	Poor	Poor
10	Small Mammals	Poor	Poor	Poor	Poor
Overall Landscape Viability					Fair

Table 4: Revised Draft Health and Viability Ratings

	Conservation Asset	Landscape Context	Condition	Size	Overall Viability
1	High Energy Coastal Dunes & Sandy Beaches	Fair?	Fair	Good	Fair
3	Low Energy Sheltered Coastlines	Poor	Poor	Fair	Poor
5	Inland Wetlands	Poor	Poor	Good	Fair
6	Sub-coastal Mallee Communities	Good	Fair	Good	Good
7	Relictual Mallee Communities	Poor	Poor	Poor	Poor
8	Open Woodlands (Sheoak, Mallee Box, Dryland Tea-tree)	Fair	Poor	Poor	Poor
9	Southern Hairy-nosed Wombat	Poor	Poor	Poor	Poor
10	Small Mammals	Poor	Poor	Poor	Poor
Overall Landscape Viability					Fair

Threats and Biodiversity Issues

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4. Threats and Biodiversity Issues

4.1. Threats and Biodiversity Issues

The key threats to the conservation assets are displayed in Table 5. The ratings for the redefined High Energy Coasts Asset are suggestions for comment and the ratings for the Climate Change threat are based on the suggestions from Paul Koch at the June CAP meeting.

The table shows that habitat fragmentation and climate change are high threats across multiple assets. Environmental weeds, introduced carnivores and agricultural impacts are also priorities for action.

4.1.2 New Threats and Biodiversity Issues

A group exercise was undertaken at the June CAP meeting to identify new emerging threats and issues in the region and the following is a list for consideration.

- Russian Wheat Aphid (soil conservation assets – unknown impacts on native grasses.)
- Increasing Kangaroo / Total Grazing Pressure
- Soil Erosion in Upper Yorke Peninsula (Pinery Fire)
- Increasing Incursion of Mangroves (eg. Coobowie)
- Increasing Population of Long-nosed Fur Seal (Impacts on Fisheries)
- Effluent and High Volume of Run-off from Coastal Towns
- Feeding of Wildlife by Tourists and Fishermen (eg. Fish to White-bellied Sea Eagle)
- Cormorants (add to Overabundant Native Species List)
- Coastal Erosion (storm surges, tides, impacts on High and Low Energy Coasts)
- Increasing Soil Acidification
- Increasing Groundwater Extraction for Road Maintenance
- Mallee Seeps around Bute (impacts on cropland)

4. Threats and Biodiversity Issues

Table 5: Draft Threat Assessment

Threats Across Targets	High Energy Coastal Dunes	Low Energy Sheltered Coast	Inland wetland	Sub-Coastal Mallee	Relictual Mallee	Open Woodland	Sth Hairy-nosed Wombats	Small Mammals	Overall Threat Rank
Habitat Fragmentation (historical land clearing)	Medium	High	High	Medium	High	High	Medium	High	Very High
Climate Change (extreme drought / temperatures, sea level rise)	Medium?	High	High	Medium	High	High	High	Not Assessed	Very High?
Environmental Weeds	High?	High	Medium	High	Medium	High			High
Incompatible Adjacent Land Management	Low?	High	High	Low	Medium	Medium	Very High		High
Introduced Carnivores (Foxes, Cats)	Medium?	High	Medium	High	Medium	Medium		High	High
Inappropriate Recreation Access	Medium?	High	Medium						High
Historical Extinction								Very High	High
Incompatible Stock Grazing & Access	Medium		High	Medium	Medium	High			High
Introduced Herbivores	Medium	Medium	Medium	Medium	Medium	Medium			Medium?
Incompatible Fire Regimes			Low	High	Medium	Medium			Medium
Disease (Sarcoptic Mange)							High		Medium
Inbreeding							High		Medium
Development and Future Vegetation Clearing	Low	Medium	Medium	Medium	Medium	Low			Medium
Native Herbivores (kangaroos)			Medium	Low	Low	Medium			Medium

Goals, Objectives and Strategies

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5. Goals, Objectives and Strategies

5.1. Conservation Objectives for the Southern Yorke Peninsula

The following goals and objectives are based on discussions at the June Technical CAP meeting where the group reviewed the existing Biodiversity Objectives and concluded that many were out of date and in need of updating. These are draft goals for comment and the Group will need to focus on updating the goals, objectives and strategies in future meetings.

Foundational Objectives

Funding Objective: By 2020, significant traditional (eg. Aus. & State Gov.) and non-traditional (eg. NGO, corporate) funding is being used for the implementation of the Naturally Yorke Program.

Community Support Objective: By 2018 community support for the Naturally Yorke Program is measurable and the group is actively seeking to increase support through demonstrated activities.

Partnerships Objective: By 2018, organisational partnerships are demonstrated by high-level organisational support and in-kind contributions to the Naturally Yorke Program.

Knowledge and Research Objective: By 2018, priority ecological knowledge gaps have been identified and the Naturally Yorke group is actively seeking partnerships with Research Organisations to address them.

High Energy Coasts and Islands Goal

By 2025 Maintain and improve the stability and habitat value of major dune systems (particularly Hardwicke Bay) to maintain barriers to sea-level rise, and restore key ecosystem functions to islands to support fauna conservation (eg. Small Mammals, Little penguin, White-bellied Sea Eagle, Australian Sealion).

Coastal Recreational Impacts Objective:

By 2021, restrict access to highly sensitive coastal breeding sites (Hooded Plovers, White-bellied Sea Eagles, Ospreys) and achieve 'good' vegetation condition in other priority areas impacted by recreational activities.

Offshore Islands – Wildlife Sanctuary Objective:

By 2021, ongoing annual reduction in the density and distribution of priority pest plants (inc red alert species) and animals (cats, mice, rats) on off-shore islands to secure their role as important wildlife sanctuary for seabirds and shorebirds and for future species reintroductions.

Offshore Islands – Revegetation Objective: By 2021, re-establish 950 hectares of suitable habitat on Wardang Island to support the recolonisation and reintroduction of terrestrial birds and small mammals.

Low Energy Sheltered Coastlines Goal

By 2021, maintain or enhance connectivity between high priority coastal habitats and terrestrial vegetation communities and adequately buffer priority coastal sites (threatened species, etc.) from incompatible land management practices and predicted sea-level rise.

Sea Level Rise Objective:

By 2025 secure sufficient (tbd) land to allow the landward migration of samphire and saltmarsh habitats while protecting all identified priority agricultural land.

5. Goals, Objectives and Strategies

***Milestone Objective:** By 2020, land areas likely to experience tidal inundation first are mapped, prioritised and at least one major site is managed for future tidal incursion.*

New Developments Objective:

By 2021, ensure new coastal developments (e.g. roads, residential, marinas, mines, wind farms) are restricted to environmentally appropriate designs and locations and no further developments in regionally significant ecological areas.

Open Woodlands and Relictual Mallee Goal:

By 2030, Maintain, expand and reconnect woodland areas of suitable structure and function (not necessarily flora composition) to support identified declining woodland birds, maintain and expand threatened plant populations and to allow native species composition change in response to climate change.

Habitat Fragmentation Objective:

By 2021, 500 hectares of strategic, landscape-scale revegetation of Open Woodlands and Relictual Mallee to support the habitat needs (patch size, shape, connectivity) of declining woodland birds.

Environmental Weeds Objective:

By 2021, eradication of emerging priority environmental weeds (eg. Buffel Grass, Beach Daisy, Bridal Veil) and on-going reduction of core infestations of established priority weeds (Acacia cyclops, Bridal Creeper, Boneseed) to protect high value habitat.

***Milestone Objective:** By 2018 develop a district-wide Weeds Strategy based on existing and new information.*

Herbivore Grazing Pressure / Threatened Orchid Objective:

By 2021, total grazing pressure (including livestock grazing regimes, rabbits and kangaroos) is managed to be consistent with native orchid conservation at ALL known threatened orchid sites, resulting in measurable population improvements for all threatened orchid species.

Nationally Threatened Plants Objective:

By 2021, at least 10 of the 14 identified nationally threatened plant species are showing stable or improving population viability (as indicated by health and population size indicators), at the scale of the Naturally Yorke district.

Sub-coastal Mallee Goal

Protect, maintain and manage suitable habitat for small mammals (eg. Western Pygmy Possum, Tammar Wallaby, dunnarts) and threatened birds (eg. Malleefowl, Western Whipbird) while allowing plant species turn-over in response to climate change, and maintaining core native vegetation and ecosystem functions.

Fire Regimes Objective:

By 2020, evidence-based, landscape-scale fire management regimes are in place for sub-coastal mallee communities that minimise the risk to flora and fauna populations (eg. Malleefowl) from large fires and maximise habitat and species diversity.

5. Goals, Objectives and Strategies

Introduced Carnivore Objective:

By 2030, detect improvements (eg. size and age class distribution) in populations of key species threatened by foxes and cats (e.g. Mallee Fowl, Goannas, Shorebirds, Echidnas, Bush-stone Curlews).

Inland Wetlands Goal:

By 2030, maintain and improve the local ecosystem functions of inland wetlands and saline lakes (eg. Peesey Swamps, Thidna swamp, Yorketown Lakes), and provide a stepping stone for migratory/non-resident birds.

Southern Hairy-nosed Wombat Goal:

By 2030, secure long term protection of at least 6 significant wombat habitat areas (colonies) with greater than 2,000 individuals in total and ongoing measurable improvement in genetic diversity and health

Wombat Sanctuary Objective:

By 2021, identify and secure long term management of at least 3 significant wombat habitat areas (colonies) with greater than 1,000 individuals and establish a monitoring program to track improvements in genetic diversity and health.

Small Mammals Goal:

By 2030, secure the long term viability of remaining small mammal species (eg. Western Pygmy Possum, Tammar Wallaby, dunnarts) and successfully reintroduce locally extinct species that restore a key ecosystem function.

Introduced Carnivore Objective:

By 2030, detect improvements (eg. size and age class distribution) in populations of key mammal species threatened by foxes and cats (e.g. Tammar Wallabies, Western Pygmy Possum, dunnart).

***Milestone Strategy Objective:** Continue to undertake a minimum of 50,000ha annual fox control on the south-western foot of the Peninsula.*

6. Monitoring and Evaluation

6.1 Monitoring Indicators for the Southern Yorke Peninsula

An effective monitoring program for the Southern Yorke Peninsula should achieve 3 major outcomes:

1) RESOURCE CONDITION MONITORING

- provide quantitative data to confirm or revise the **current status** of the key ecological attributes and overall viability of the conservation assets & / or the current status of the key threats;
- establish baseline data to monitor **future changes** in the status of the key ecological attributes and overall viability of the conservation assets &/ or status of the key threats;

2) STRATEGY EFFECTIVENESS MONITORING

- provide quantitative data to assess the effectiveness of the conservation strategies and action steps and identify areas for refinement.

3) TRACKING PROGRESS

- Develop a report card type reporting system to track accumulated project outcomes toward the stated objectives (eg. Multiple revegetation projects all achieving the same stated objective).

Monitoring indicators should be closely associated to the status of the key ecological attributes of the conservation assets and address landscape context, condition and size attributes (refer Table 7). A monitoring program should also make use of any existing data and monitoring activities in the region so as to ensure resources are used efficiently. This may involve creating links with other organisations that may have complimentary aims or legislative requirements to undertake environmental monitoring. For additional detail regarding historical monitoring programs in the region refer to ***Overview of Biodiversity Monitoring in the Northern & Yorke NRM Region (Milne & McGregor 2011)***. For an example of a detailed monitoring plan for a sub-region of the CAP region, refer to the *South-western Yorke Peninsula Biodiversity Monitoring Plan (Nature Conservation Society of SA 2013)*.

7. Monitoring and Evaluation

Table 6: Monitoring Indicators for Key Ecological Attributes (KEA) of the Conservation Assets

Conservation Asset	LANDSCAPE CONTEXT KEA				CONDITION KEA			SIZE KEA
	Dune Formation / Tidal Deposition	Hydro-logical Regimes	Connectivity	Patch Size, shape & Configuration	Water Quality	Flora Species / Habitat Condition	Fauna Species	Total area
High Energy Coasts and Islands	1. Barriers to natural dune formation processes 2. Presence of excessive erosion (dune blow outs)		Percentage of coast buffered by adequate vegetation buffers			Flora Species diversity & composition (BCM sites, weeds)	Trends in 'habitat / threat sensitive' fauna (Hd. Plovers, Shorebirds, Osprey, W.B Sea Eagle, mammals)	Total hectares remaining
Low Energy Coasts	Diversity / mosaic of appropriate coastal habitats (sand spits, mud / sand flats)		Percentage of coast buffered by adequate vegetation buffers		Levels of pollutants and nutrients at key storm water runoff areas	Flora species diversity & composition (BCM sites)	Trends in 'habitat / threat sensitive' fauna (Hd. Plovers, Shorebirds)	Total hectares remaining
Inland Wetlands		1. Flooding regime (frequency, volume, timing) 2. Ground water depth & recharge	% of wetlands buffered by adequate vegetation buffers		Percentage of wetlands within expected salinity, pH and nutrient range	Flora species diversity & composition (BCM sites)	Trends in 'habitat / threat sensitive' fauna (water birds, waders, invertebrates, frogs)	Total hectares remaining
Sub-coastal Mallee				Ave. patch size, shape configuration and distance to other patches		Flora species diversity & composition (BCM sites)	Trends in 'habitat / threat sensitive' fauna (Mallee Fowl, Tamar Wallabies, Western Whipbird)	Total hectares remaining
Relictual Mallee				Ave. patch size, shape configuration and distance to other patches		Flora species diversity & composition (BCM sites)	Trends in 'habitat / threat sensitive' fauna (declining bird species)	Total hectares remaining
Open Woodlands				Ave. patch size, shape configuration and distance to other patches		Flora species diversity & composition (BCM sites)	Trends in 'habitat / threat sensitive' fauna (declining bird species)	Total hectares remaining
Southern Hairy-nosed Wombats			Genetic diversity and connectedness of colonies			Habitat availability - presence of native grasses, soil type	# of young, males - sex ratio, age classes. % of population within range	# Individuals, colonies & average size of colonies
Small Mammals						Habitat availability - condition and connectedness	Species population numbers, distribution & overall health	% of small mammal species remaining

7.1 Key Knowledge Gaps

Key knowledge gaps have been discussed at many of the Naturally Yorke planning meetings but it has been recognised that the Program needs to be more proactive in this regard.

The following is the beginning of a more formal list of research topics and questions that will need to be addressed in order to successfully implement the Strategies and Actions of the Program.

List of Key Knowledge Gaps/Requirements:

Coasts

1. What are the climate change implications for the Low Energy Coasts asset?

Open Woodlands and Mallee Associations

1. What is the threat level for 'loss of pollinators and ecosystem engineers' on SYP? – ie. relative to CAP Assets?
2. Is it feasible to introduce orchid species into restored Open Woodland sites?
3. It has been noted that recruitment of Sheoak and pine has been poor on the peninsula (particularly around the Peesey), research is needed on recruitment drivers for many species.
4. What may be some of the underlying reasons for vegetation decline that are unknown at present (eg. bees)?
5. Why are orchids still declining in areas where the vegetation has not visibly changed in many years (eg. Mulbura Pk)?

Wetlands

1. What is driving poor water quality within the Inland Wetlands?
2. In relation to the Peesey system it was observed that samphire regeneration has occurred on gypsum soils previously used for salt scraping - can we use this to advantage?
3. What constitutes an appropriate grazing regime in samphire shrublands around Peesey Swamp, and for other unique vegetation types on the peninsula?
4. What ground nesting birds are utilising our salt lakes/ flats as breeding habitat? What is the breeding success and what are the potential threats?
5. Determining the genetics of the Hooded Plovers found nesting on our salt lakes to see where they fit in with the two known sub-species (east and west).

SH Wombat and Small Mammals

1. Do the inland cave systems at Curramulka have significant conservation value (eg. bats)?
2. What constitutes a viable population of Southern Hairy-nosed Wombats on YP?
3. Can deterrents such as dog urine be used to keep Wombats out of crops and can this be effectively implemented?

2) Threat-Related Questions

Feral carnivores

1. Fox vs. cat impacts – who's worse? Do we have any idea of how many foxes and cats in the landscape?
2. Feral carnivores are recognised as a high threat on SYP through predation, but what positive role do they play within trophic structures and interactions?
3. Are fox and cat impacts on waterbirds in the Inland Wetland Systems significant?

4. Fauna surveys showed that rats and mice are very common on YP, are they a bigger problem than thought? Do mice and rats have significant impacts on native orchids?

Feral and Native Herbivores

1. Are rabbits more prevalent on limestone areas?
2. What is the kangaroo carrying capacity of Open Woodlands, coasts and mallee vegetation? Can we measure it by looking at populations or by looking at vegetation?
3. Are raptors and/or snakes over-abundant and impacting fauna on SYP?
4. Do introduced white snails, which are prolific on the peninsula, contribute to the prevention of natural regeneration?

Weeds and Fire

1. What is the role of weeds in altering fire regimes on SYP?
2. What changes to food resources and availability for fauna species occur as a result of altered flora composition through weed invasion?
3. Do weed infestations change the soil and other ecological functions on SYP?
4. What are the positive interactions between identified priority weed species and some native fauna species on SYP (eg. African Boxthorn and native birds)?

Viability Assessment

Appropriate indicator species are required for viability assessment of most CAP Assets – are threatened species sufficient indicators? – do we need locally declining species? Can we identify appropriate bird indicators for Assets?



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8. Appendices

Appendix 1: Plant Species of State and National Conservation Significance (Source: DEWNR Spatial Database)

SPECIES	COMMON NAME	CONSERVATION STATUS*	
		AUS	SA
<i>Acacia dodonaeifolia</i>	Hop-bush Wattle		R
<i>Acacia enterocarpa</i>	Jumping-jack Wattle	EN	E
<i>Acacia lineata</i>	Streaked Wattle		R
<i>Acacia rheticarpa</i>	Resin Wattle	VU	V
<i>Adiantum capillus-veneris</i>	Dainty Maiden-hair		V
<i>Asplenium trichomanes</i>	Common Spleenwort		R
<i>Atriplex australasica</i>			R
<i>Austrostipa echinata</i>	Spiny Spear-grass		R
<i>Austrostipa gibbosa</i>	Swollen Spear-grass		R
<i>Austrostipa multispiculis</i>			R
<i>Austrostipa nullanulla</i>	Club Spear-grass		V
<i>Austrostipa pilata</i>	Prickly Spear-grass		V
<i>Billardiera</i> sp. Yorke Peninsula (P.C.Heyligers 80164)	Lehmann's Apple-berry		E
<i>Bothriochloa macra</i>	Red-leg Grass		R
<i>Caladenia bicallata</i> ssp. <i>bicallata</i>	Western Daddy-long-legs		R
<i>Caladenia brumalis</i>	Winter Spider-orchid	VU	V
<i>Caladenia conferta</i>	Coast Spider-orchid	EN	E
<i>Caladenia flaccida</i>	Drooping Spider-orchid		V
<i>Caladenia intuta</i>	Ghost Spider Orchid	CR	E
<i>Caladenia macroclavia</i>	Large-club Spider-orchid	EN	E
<i>Caladenia sanguinea</i>	Crimson Daddy-long-legs		R
<i>Caladenia tensa</i>	Inland Green-comb Spider-orchid	EN	
<i>Centrolepis cephaliformis</i> ssp. <i>cephaloformis</i>	Cushion Centrolepis		R
<i>Centrolepis glabra</i>	Smooth Centrolepis		R
<i>Choretrum glomeratum</i> var. <i>chrysanthum</i>	Yellow-flower Sour-bush		R
<i>Corybas expansus</i>	Dune Helmet-orchid		V
<i>Corybas unguiculatus</i>	Small Helmet-orchid		R
<i>Crassula exserta</i>	Large-fruit Crassula		R
<i>Daviesia benthamii</i> ssp. <i>humilis</i>	Mallee Bitter-pea		R
<i>Daviesia sejugata</i>	Disjunct Bitter-pea		E
<i>Euphrasia collina</i> ssp. <i>osbornii</i>	Osborn's Eyebright	EN	E
<i>Haegiela tatei</i>	Small Nut-heads		R
<i>Hydrocotyle diantha</i>	Kangaroo Island Pennywort		E
<i>Isotoma scapigera</i>	Salt Isotome		R
<i>Lachnagrostis robusta</i>	Tall Blown-grass		R
<i>Leionema microphyllum</i>	Limestone Phebalium		R
<i>Leptorhynchos elongatus</i>	Lanky Buttons		R
<i>Leptorhynchos scaber</i>	Annual Buttons		R
<i>Leptorhynchos tenuifolius</i>	Wiry Buttons		R

8. Appendices

SPECIES	COMMON NAME	AUS	SA
<i>Leucopogon clelandii</i>	Cleland's Beard-heath		R
<i>Levenhookia stipitata</i>			R
<i>Maireana rohrlachii</i>	Rohrlach's Bluebush		R
<i>Mentha diemenica</i>	Slender Mint		R
<i>Microlepidium pilosulum</i>	Hairy Shepherd's-purse		R
<i>Myoporum parvifolium</i>	Creeping Boobialla		R
<i>Olearia pannosa ssp. pannosa</i>	Silver Daisy-bush	VU	V
<i>Olearia passerinoides ssp. glutescens</i>	Sticky Daisy-bush		R
<i>Orobanche cernua var. australiana</i>	Australian Broomrape		R
<i>Phebalium glandulosum ssp. glandulosum</i>	Glandular Phebalium		E
<i>Philothea angustifolia ssp. angustifolia</i>	Narrow-leaf Wax-flower		R
<i>Phlegmatospermum eremaeum</i>	Spreading Cress		R
<i>Phyllanthus calycinus</i>	Snowdrop Spurge		R
<i>Pimelea curviflora var. gracilis</i>			R
<i>Pleuropappus phyllocalymmeus</i>	Silver Candles	VU	V
<i>Poa drummondiana</i>	Knotted Poa		R
<i>Poa fax</i>	Scaly Poa		R
<i>Poa meionectes</i>	Fine-leaf Tussock-grass		V
<i>Podolepis jaceoides</i>	Showy Copper-wire Daisy		R
<i>Podolepis muelleri</i>	Button Podolepis		V
<i>Polypogon tenellus</i>			V
<i>Prasophyllum calcicola</i>	Limestone Leek-orchid		V
<i>Prasophyllum constrictum</i>	Tawny Leek-orchid		R
<i>Prasophyllum fecundum</i>	Self-pollinating Leek-orchid		R
<i>Prasophyllum goldsackii</i>	Goldsack's Leek-orchid	EN	E
<i>Prasophyllum occultans</i>	Hidden Leek-orchid		R
<i>Pteris tremula</i>	Tender Brake		R
<i>Ranunculus sessiliflorus var. pilulifer</i>	Annual Buttercup		V
<i>Sarcozona bicarinata</i>	Ridged Noon-flower		V
<i>Senecio macrocarpus</i>	Large-fruit Groundsel	VU	V
<i>Spyridium leucopogon</i>	Silvery Spyridium		R
<i>Stackhousia annua</i>	Annual Candles	VU	V
<i>Tecticornia flabelliformis</i>	Bead Samphire	VU	V
<i>Tecticornia lepidosperma</i>			R
<i>Thysanotus tenellus</i>	Grassy Fringe-lily		R
<i>Triglochin minutissima</i>	Tiny Arrowgrass		R
<i>Xanthorrhoea semiplana ssp. tateana</i>	Tate's Grass-tree		R
	Totals	14	75

8. Appendices

Appendix 2: Vertebrate Fauna of State and National Conservation Significance (Source: DEWNR Spatial Database)

SPECIES	COMMON NAME	AUS	SA
<i>Cladorhynchus leucocephalus</i>	Banded Stilt		V
<i>Egretta sacra</i>	Eastern Reef Egret		R
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle		E
<i>Leipoa ocellata</i>	Malleefowl	VU	V
<i>Morelia spilota</i>	Carpet Python		R
<i>Neophoca cinerea</i>	Australian Sea-lion	VU	V
<i>Pandion cristatus</i>	Eastern Osprey		E
<i>Pedionomus torquatus</i>	Plains-wanderer	VU	E
<i>Psophodes nigrogularis leucogaster</i>	Western Whipbird (Eastern subspecies)	VU	E
<i>Stagonopleura guttata</i>	Diamond Firetail		V
<i>Stemula nereis</i>	Fairy Tern		E
<i>Thinornis rubricollis</i>	Hooded Plover		V
<i>Turnix varius</i>	Painted Button-quail		R
<i>Varanus rosenbergi</i>	Heath Goanna		V
	Totals	4	14

8. Appendices

Appendix 3: Northern and Yorke Natural Resources Management Board Goals

COASTAL, ESTUARINE AND MARINE ECOSYSTEMS
By 2030, there is no reduction in the extent, and a steady improvement in the condition, of coastal, estuarine and marine ecosystems, compared to 2008.
By 2015, there is no decline in the extent or condition of mangrove forests
By 2030, water quality is maintained to meet levels set for aquatic ecosystems in the Environment Protection (Water Quality) Policy.
By 2030, a 10% reduction in the pollutant load of discharges from licensed point source pollution sites.
By 2015, a 50% reduction in the pollutant load of sewage and stormwater discharged into the marine environment
By 2015, Stormwater and Flood Mitigation Plans are implemented for regional cities and major towns.
By 2015, local Development Plans incorporate principles to protect water quality, as presented in the Regulations and Policies of the NRM Plan.
By 2030, the extent and diversity of coastal landscapes is maintained and their condition improved compared to 2008.
By 2030, there is no decline in the conservation value of the 35 coastal areas of highest conservation priority.
By 2030, an improvement in the conservation value of an additional 14 areas, currently classed as “priority coastal cells”.
By 2015, the condition of at least 4, out of 14, “priority coastal cells” is improved to high conservation totals.
By 2015, there is no further decline in the conservation value of the remaining coastal areas.
By 2015, there is an overall reduction in the threats to coastal ecosystems and landscapes from vegetation clearance, weeds and uncontrolled access by stock, vehicles and pedestrians
By 2015, coastal management guidelines are adopted for vegetation management and public access
By 2015, local Development Plans incorporate principles to protect coast, as presented in the Regs & Policies of the NRM Plan.
WATER AND FRESHWATER ECOSYSTEMS
By 2030, the amount of surface and groundwater available is maintained within the bounds of historical variations and does not deviate significantly from seasonal climatic drivers.
By 2030, fluctuations in groundwater levels, pressures and seasonal spring and baseflows will be maintained within the limits previously observed in the region, for comparable climatic conditions.
By 2030, flow regimes in priority river catchments do not deviate significantly from previously observed seasonal and inter-annual variations for comparable climatic conditions.
By 2015, a revised Water Allocation Plan, compliant with National Water Initiative guidelines, is in place for the Clare region.
By 2015, the Baroota area has an approved Water Allocation Plan in place.
By 2015, the management of water resources is regulated by a series of defined Water Affecting Activities.
By 2030, water quality is maintained, within climatic limitations and natural conditions, within levels set for aquatic ecosystems in the Environment Protection (Water Quality) Policy.
By 2030, mean nutrient levels in watercourses are maintained below Environment Protection Policy (Water Quality) guidelines for aquatic ecosystems.
By 2030, fluctuations in salinity levels in surface water and groundwaters exhibit trends that reflect climatic and seasonal influence and do not exceed levels recorded prior to 2008.
By 2015, Stormwater and Flood Mitigation Plans are implemented for regional cities and major towns.
By 2015, local Development Plans incorporate principles to protect water quality, as presented in the Regulations and Policies of the NRM Plan.
By 2015, salinity management plans are implemented in high priority catchments.
By 2030, core refuge areas are protected by a 20% reduction in the extent of priority degrading watercourse management issues.
By 2015, the length of watercourses unaffected by priority degrading management issues is increased by 5%, with a focus on protecting core refuge areas.
By 2015, River Management Plans are reviewed for the Light, Wakefield and Broughton Rivers

8. Appendices

TERRESTRIAL ECOSYSTEMS
By 2030, maintain the condition of the region's 1,200,000 ha of remnant native vegetation, and improve the condition of 15% from 2008 levels.
By 2015, increase in the area of remnant vegetation protected under legal and voluntary conservation agreements from 75,000 ha to 85,000 ha, with priority given to high conservation value remnants
By 2015, undertake active management on 100,000 ha of the region's remnant vegetation to improve condition compared with 2008.
By 2015, sustainable grazing guidelines have been developed with industry for native pastures to ensure grassy ecosystems are not degraded and to facilitate their recovery
By 2030, there has been no loss of ecologically significant species or communities, and the viability and conservation status of these species has been improved from 2008 levels.
By 2015, the status of Nationally, State and regionally listed species and ecological communities is maintained or improved from 2008 levels.
By 2015, threatened species protection plans will be developed and implemented for threatened species of local priority.
By 2030, there is an increase in ecological connectivity within and between landscapes from 2008.
By 2015, the ecological connectivity of at least three priority landscapes (Flinders-Olary, Tothill Ranges, Southern Yorke Peninsula) is increased, compared to 2008.
By 2015, increase the area of native vegetation by 5,000 ha, with a focus on increasing the functionality of remnant vegetation and the protection of erosion prone areas such as coastal dunes.
By 2015, management plans are implemented for areas of Category A and B roadside vegetation significance
By 2030, inland and estuarine water-dependent ecosystems are maintained or improved in condition from 2008 levels.
By 2015, the condition of at least 600 ha of water dependent ecosystems is improved compared to 2008.
By 2015, the extent of watercourse, wetland and other water dependent ecosystems does not decline from 2008 levels.
By 2015, at least 25% of areas classified as "important riverine habitat" are protected and actively managed.
By 2015, at least 25% of areas classified as "good native watercourse vegetation" are protected and actively managed.
By 2015, Water Allocation Plans provide water to meet the needs of the environment.
PEST PLANTS AND ANIMALS
By 2030, there is a net reduction in the impact caused by pest plants and animals on the environment, primary production and the community.
By 2030, the distribution and abundance of introduced pest plants has not increased compared with 2008.
By 2030, the distribution and abundance of pest animals has not increased compared with 2008.
By 2015, pest risk assessment and management plans are operational for priority pest plants and animals
By 2015, 50% of priority areas are managed to control feral animals.
By 2015, 90% of roadsides are managed with effective weed control programs
By 2030, no new significant introduced pest species have become established.
By 2015, biosecurity and incursion response plans are operational for priority pest plants and animals.

8. Appendices

Appendix 4: Participants of the Southern Yorke Peninsula CAP process 2011 - 2015

Member	Organisation	Position / Role / Expertise
David Sloper	DEWNR	Natural Resource Management Officer
David Pearce	DEWNR	Yorke Peninsula Regional Manager
Jennifer Munro	DEWNR	Water Officer
Robert Lincoln	DEWNR	Animal and Plant Control Team Leader
Andy Sharp	DEWNR	Conservation Programs Manager
Jean Turner	DEWNR	Regional Ecologist
Ian Falkenberg	DEWNR	Program Manager, District Ranger
Caroline Paterson	DEWNR	(former) District Ranger – Yorke
Justin Holmes	DEWNR	District Ranger – Yorke
Peter Copley	DEWNR	Threatened Species & Communities
Deborah Furbank	DEWNR	Community Liaison Officer
Dan Rogers	DEWNR	Ecologist
Adrian Brown	DEWNR	Coastal Management
Jasmine Swales	DEWNR	Ranger - Innes National Park
Van Teubner	DEWNR	Tammar Wallabies, Feral Animal Control
Hannah Short	DEWNR	Feral Animal and Plant Control
Deb Agnew	DEWNR	Community Engagement & Planning
Paul O'Leary	DEWNR	Yorke Peninsula Regional Manager
Max Barr	DEWNR	Project Officer
Stephen Goldsworthy	Council of Yorke Peninsula	Council Reserves, Roadside Management
Michael Richards	Ag Excellence Alliance	Landcare Officer
Dr Sophie Petit	University of SA	Environment Course Coordinator
Chris Rains	Aboriginal Lands Trust	Indigenous Communities and Landcare
Roger Rigney	Aboriginal Lands Trust	Indigenous Communities and Landcare
Bev Coomes	Aboriginal Lands Trust	Indigenous Communities and Landcare
Cherie Beech	Narunga Investment Company	Point Pearce Aboriginal Community
Peter Stockings	Point Pearce Aboriginal Corporation	Landholder and Point Pearce rep
Cath & Malcom Houston	Native Orchid Society of SA	Native Orchids, Flora Knowledge
Kent Treloar	Local Landholder	Bird Surveys, Farming, Local Knowledge
Neil Smith	Local Landholder, YP NRM Group	Farming, Local Environmental Knowledge
Ian Brown	Local Landholder	Farming, Local Environmental Knowledge
Ann Williams	Local Landholder	Local Environmental Knowledge
Grantley Dodd	Local Landholder, YP NRM Group	Local Knowledge
Todd Berkinshaw	Greening Australia	Conservation Planner
Dr Paul Koch	Greening Australia	Conservation Planner, Ecologist
Mick Durant	Greening Australia	Senior Vegetation Consultant
Dr David Taggart	University of Adelaide	Senior Research Fellow
John Pitt	Rural Solutions SA	Principle Consultant
Stuart Collard	Nature Conservation Society of SA	Biodiversity, monitoring
Peter Mahoney	Nature Conservation Society of SA	Biodiversity, monitoring

8. Appendices

Appendix 5: Biodiversity Conservation Projects on Southern Yorke Peninsula as at June 2012

Project	Organisations	Notes
Community and Local Government		
Introduced Tree Project at Minlaton	Southern Yorke Peninsula Landcare Group, District Council of Yorke Peninsula	Community group undertaking exotic tree control (eg. Aleppo Pine)
Mulbura Park Reserve near Port Vincent	National Trust of SA	Private conservation reserve with significant flora species
Hardwicke Bay Coastal Dunes	Prince Alfred College (camp at Point Turton)	Prince Alfred College working with community groups to develop a management plan for Hardwicke Bay
Revegetation at Pine Point	Conservation of Our Threatened Species (COOTS)	Associated with (<i>Acacia retinocarpa</i>) conservation
Community Group Weed Control (Acacia cyclops, Polygala, Diosma, Boxthorn & Aleppo Pine)	Foul Bay Area Progress Association, South Coast Road Environmental Group DEWNR	Introduced plant removal to enhance local biodiversity Community Coastcare Grants
Code of the Coast Signage - Visitor Information and Conduct	District Council of Yorke Peninsula	Central Local Government Coastcare Grants
Management of Coastal Camp Reserves - Recreational Strategy	District Council of Yorke Peninsula	Central Local Government Coastcare Grants
Bird Hide at Coobowie Inlet	District Council of Yorke Peninsula, Coobowie Progress Association	Community Coastcare Grants
Marion Bay Viewing Platform and Access Control	District Council of Yorke Peninsula, Marion Bay Township Committee	Community Coastcare Grants
Hooded Plover Signage	District Council of Yorke Peninsula, Birds Australia, DEWNR	Community Coastcare Grants
Daly Heads Access Control, Signage & Weed Control	District Council of Yorke Peninsula, West of the Peesey Biodiversity Group, DEWNR	NRM Grants
Pt. Turton Revegetation for Coastal Erosion & Access Control.	District Council of Yorke Peninsula	NRM Grants
Volunteers within National Parks	Friends of Parks DEWNR	Includes works in Innes National Park, Troubridge and Althorpe Islands
Department of Environment, Water and Natural Resources (DEWNR)		
Landscape Assessment Framework	DEWNR	Tool for prioritising conservation works – applied to the region by Dan Rogers
Fox Baiting (Baiting for Biodiversity)	DEWNR	Program started in 2008 to support parks by fox baiting on private land.
Pest Plant and Animal Control Program	DEWNR	Authorised Officers (include Boneseed and Bridal Creeper control works)
Mallee Fowl Monitoring, Innes National Park	DEWNR, Volunteers	Part of a national Mallee Fowl volunteer monitoring program
Tammar Wallaby Re-introduction	DEWNR	Re-introduced to Innes National Park

8. Appendices

Fox Baiting Innes National Park	DEWNR	Fox baiting (fortnightly) in Innes National Park for Malleefowl and Tamar Wallaby
Western Whipbird Monitoring	DEWNR	Momentum has slowed on this project.
Yellowish Sedge-skipper Survey Monitoring	DEWNR	-
DEWNR Fire Management	DEWNR	Asset protection & ecological burns
Conservation Parks—Onground Works	DEWNR	Various weed control and survey projects
Coastal Conservation Assessment	DEWNR	Assessment of the Northern & Yorke coast for threats and conservation values
BEST program	DEWNR and volunteers	Biodiversity Blitz including survey work and weed control by volunteers
Community Liaison Project (South-western Yorke Peninsula)	DEWNR	Engagement of landholders and development of community groups
South Western Yorke Peninsula Biodiversity Fund Project 2012-2017	DEWNR	5 year project to control weeds, manage coastal recreational impacts, undertake revegetation on southern Yorke Peninsula
Other		
Point Pearce Indigenous Protected Area (IPA)	Aboriginal Lands Trust, Point Pearce community	Funding for local community to manage land at Point Pearce and Wardang Island
Point Pearce Aboriginal Learning on Country (ALOC)	Aboriginal Lands Trust, Point Pearce community	Training program
Aboriginal Land Management	Aboriginal Lands Trust, Point Pearce community	Various activities including weed control and Southern Hairy-nosed Wombat protection
Lofty Block Threatened Orchid Project	Collaborative project including Native Orchid Society of SA, DEWNR, NRM Boards (AMLR, N&Y), Friends of Spring Gully, Friends of Halbury Parklands	Working on Recovery Plans for 7 nationally threatened orchid species including <i>Caladenia macroclavia</i> and <i>C. intuta</i> on southern Yorke Peninsula
Pygmy Possum Monitoring/ Research	University of SA	Research by Topa Petit and students
Student Research (University of SA)	University of SA	Includes research into foxes, introduced rodents, introduced and native bee interactions, pollination and fire, phenology of plant species.
Distribution and Abundance of the Southern Hairy-nosed Wombat on Yorke Peninsula	Adelaide University - David Taggart, Lisa Sparrow, Sue Carthew	Research and support project
Inbreeding and Fertility of Southern Hairy-nosed Wombat on Yorke Peninsula	Adelaide University - David Taggart, Lisa Sparrow, Sue Carthew	Research and support project
Bi-annual Hooded Plover Monitoring Program	Birds Australia	On-going project
White-bellied Sea Eagle and Osprey Research/Monitoring	Birds Australia (by Terry Dennis)	State-wide project
South Australian Museum	South Australian Museum	Various research including groundwater invertebrates and mammal fossils.
Sustainable Agriculture projects	Ag Excellence Alliance	A number of projects including no-till farming, education and pollination.
Private Conservation Reserves	National Trust (Mulbura Park), private landholders, Heritage Agreements	-
Conservation Action Planning	Greening Australia	Workshops and development of a conservation action plan for the region
Trees for Life Biodiversity Fund Revegetation Project (2012-14)	Trees for Life	Revegetation on southern Yorke Peninsula

8. Appendices

Appendix 6: Available CAP Resources and Recent Reports

Product	Format
Southern Yorke Peninsula Conservation Action Plan	Excel File (Nature Conservancy Software)
Southern Yorke Peninsula CAP Summary 2011 - 2015	Adobe pdf document (Word versions also available)
Spatial Cap Tool	.pmf File for viewing in ESRI ArcReader software (free software)
Scoping Reports CAP Scoping Report #1 - <i>Developing Priority Weed Programs for Southern Yorke Peninsula</i> , Report to the Department for Environment Water and Natural Resources and the Yorke Peninsula CAP Working Group. Durant, M. (2013) CAP Scoping Report #2 - <i>Peeseey Swamps, Southern Yorke Peninsula</i> , Report to the Northern and Yorke Natural Resources Management Board and the Yorke Peninsula CAP Working Group. Durant, M. (2013) <i>Assessment of the Reintroduction Potential of regionally Extinct Fauna on Southern Yorke Peninsula</i> , Bush Science Services, Report to DEWNR and NYNRMB, D. Taggart 2014.	Adobe pdf documents (Word versions also available)
Priority Mapping Koch, P.J. (2013) <i>Southern Yorke Peninsula Spatial Prioritisation: Mapping Priorities for Habitat Management and Restoration</i> . Summary report. Unpublished Report, Greening Australia.	Adobe pdf document (Word versions and separate maps also available)
Soil and Water CAP <i>Yorke Peninsula Sustainable Soils Conservation Action Planning Summary 2015</i> . Report to the Northern and Yorke Natural Resources Management Board and Department of Environment Water and Natural Resources. Greening Australia. McGregor, J. (2015) <i>Sustainable Water Conservation Action Planning Summary 2014</i> . Report to the Northern and Yorke Natural Resources Management Board and Department of Environment Water and Natural Resources. Greening Australia. McGregor, J. (2014)	Adobe pdf document (Word versions also available)
Landholder Survey <i>Landholder Values and Preferences for Carbon Farming and Native Vegetation Management on Southern Yorke Peninsula</i> , Report to NYNRM Board from University of SA, Raymond C. and Weber D. 2014.	Adobe pdf document (Word versions also available)
Monitoring Overview of Biodiversity Monitoring in the Northern and Yorke Natural Resources Management Region. Report by Greening Australia for Northern and Yorke NRM Board. Milne T. and McGregor J. (2011). <i>Southern Yorke Peninsula Monitoring Plan</i> . Nature Conservation Society of South Australia Inc, Adelaide. Nature Conservation Society of South Australia (2013). <i>Bushland Condition in the Open Woodlands of the Southern Yorke Peninsula of SA – a stratified random condition assessment of 20 sites</i> . Nature Conservation Society of South Australia Inc, Adelaide. Mahoney P. (2013).	Adobe pdf document (Word versions also available)

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