Department for Environment and Heritage

Management Plan

Althorpe Islands, Goose Island and Troubridge Island Conservation Parks

2009

Government of South Australia

www.environment.sa.gov.au

This plan of management was adopted on **9 January 2009** and was prepared pursuant to section 38 of the *National Parks and Wildlife Act 1972*.

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Front Cover: Coastline of Althorpe Island (photo by P. Canty, DEH).

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Government of South Australia

Department for Environment and Heritage

FOREWORD

Althorpe Islands, Goose Island and Troubridge Island Conservation Parks are all located offshore of the Yorke Peninsula in South Australia, and provide important habitat for many coastal and marine bird species. Althorpe Islands Conservation Park is located in the exposed seas of Investigator Strait between the 'toe' of Yorke Peninsula and Kangaroo Island, and covers approximately 163 hectares over the three main islands of Althorpe, Haystack and Seal, and several small islets and rocky reefs. The Goose Island Conservation Park group, covering approximately 35 hectares, is nestled in the sheltered waters between Point Pearce and Wardang Island at the 'knee' of the Peninsula, and is of cultural significance to the Narungga people. Troubridge Island Conservation Park is located offshore from Edithburgh on the 'heel' of the Peninsula, and is a popular tourist destination for local and interstate visitors alike.

Collectively, these island parks protect significant seabird colonies, including the State endangered White-bellied Sea-eagle (*Haliaeetus leucogaster*), as well as Crested Terns (*Sterna bergii*) on Goose Island and Little Penguins (*Eudyptula minor*) on Troubridge Island. The smaller islets of Althorpe Islands and Goose Island Conservation Parks provide haul-out areas for the nationally and State vulnerable Australian Sea-lion (*Neophoca cinerea*). The main Althorpe Island and Troubridge Island also played a significant part in the State's maritime history, with lighthouse keepers' cottages of State Heritage significance remaining as evidence of the islands' past use.

In recognition of their importance to biodiversity and cultural heritage conservation, the Althorpe Islands and Troubridge Island have been set aside as Prohibited Areas under the *National Parks and Wildlife Act 1972*, and access is restricted to authorised visitors only. This plan defines a series of objectives and actions to reflect the conservation focus of management, providing for the long-term protection of these island parks.

Many people have contributed to the development of this plan of management. Their interest and helpful suggestions are gratefully acknowledged.

I now formally adopt the plan of management for Althorpe Islands, Goose Island and Troubridge Island Conservation Parks under the provisions of section 38 of the *National Parks and Wildlife Act 1972*, and I encourage you to read the plan.

Jay Weatherill

HON JAY WEATHERILL MP

MINISTER FOR ENVIRONMENT AND CONSERVATION

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Althorpe Islands, Goose Island and Troubridge Island Conservation Parks are located south, west and east of Yorke Peninsula, respectively (Figure 1). These parks comprise one or more islands, with the proclamations of the parks occurring over many years. Property descriptions are included in Appendix A. All parks are proclaimed to low water mark and are without access under State mining legislation.

Althorpe Islands Conservation Park (162.87 hectares) is located in Investigator Strait, south of the 'toe' of Yorke Peninsula. The park was first proclaimed in 1967 as a fauna reserve and was constituted by statute as Althorpe Islands Conservation Park with the passage of the National Parks and Wildlife Act in 1972. Several additions have been made since then, the most recent being the main Althorpe Island in 1997. Today the park consists of three large islands (Althorpe, Haystack and Seal) that rise out of the sea with granitic cliffs and dramatic plateaus, and several islets and rocky reefs. Althorpe Island is the southernmost, highest (93 metres) and largest (96 hectares) island, and lies approximately 8.5 kilometres (4.5 nautical miles) south-west of Cape Spencer. Haystack and Seal Islands lie approximately 7 kilometres (3.8 nautical miles) north-east and 6.5 kilometres (3.5 nautical miles) east-north-east of Althorpe Island, respectively.

Goose Island Conservation Park (34.89 hectares) is located in Spencer Gulf, south of the 'knee' of Yorke Peninsula, north-west of Port Victoria and north of the largest island in the vicinity, Wardang Island. The park was constituted by statute in 1972 to conserve an offshore breeding and refuge area for sea-birds and the Australian Sea-lion (*Neophoca cinerea*). Goose Island Conservation Park comprises a scattered group of 12 small, limestone islands that are thought to have once been part of a land bridge connecting Point Pearce peninsula to Wardang Island. The park's islands are generally low-lying and featureless, the most identifiable being:

- Goose Island, approximately 4.5 kilometres (2.4 nautical miles) west of Point Pearce;
- Little Goose Island, approximately 250 metres (0.13 nautical miles) north-north-east of Goose Island;
- White Rocks, an elongated band of rocky reef and large boulders 370 metres north-west of Goose Island;
- Island Point, approximately five kilometres (2.7 nautical miles) north-west of Goose Island;
- Rocky Island, approximately six kilometres (3.2 nautical miles) south-east of Goose Island; and
- three islets adjacent Goose Island called Seal Rocks.

Troubridge Island Conservation Park (259.90 hectares) is located at the entrance to Gulf St Vincent in Investigator Strait, seven kilometres east (3.8 nautical miles) of the 'heel' of Yorke Peninsula, not far from Edithburgh. The park was proclaimed in 1982 to conserve sea-bird rookeries and to preserve heritage values of a lighthouse and associated keepers' cottages. In 1986 the park boundary was extended to encompass a relatively large intertidal area around the island. Troubridge Island (approximately two hectares at high tide) is essentially a vegetated shifting sand-spit that rises from the heart of a broad sandbank (Robinson et al., 1996). The island's profile has altered considerably over the years.

All three parks are relatively small and their environments substantially altered from their pre-settlement condition. However, they still provide specialised habitat for a range of coastal-adapted flora and fauna. The only native plant species of conservation significance recorded in the parks are the state vulnerable Australian Broomrape (*Orobanche cernua* var. *australiana*) at Goose Island Conservation Park, and state rare Scaly Poa (*Poa fax*) at Althorpe Islands Conservation Park. The islands provide important habitat for numerous bird species, including the state endangered Fairy Tern (*Sterna nereis*), Hooded Plover (*Thinornis rubricollis*), and White-bellied Sea-Eagle (*Haliaeetus leucogaster*), and the state rare Osprey (*Pandion haliaetus*), Peregrine Falcon (*Falco peregrinus*) and Rock Parrot (*Neophema petrophila*). The waters surrounding the islands are important feeding and breeding areas for the nationally and state vulnerable Australian Sea-lion, as well as the New Zealand Fur Seal (*Arctocephalus forsteri*).

Althorpe Islands and Troubridge Island Conservation Parks each contain a lighthouse and associated keepers' cottages, which have important links with South Australia's maritime history. Construction of the lighthouse on Althorpe Islands Conservation Park commenced in 1877, and was operated and maintained by lighthouse keepers following its completion in 1879 until 1991; it is now automated and is maintained by the Australian Maritime Safety Authority (AMSA). The lighthouse on Troubridge Island Conservation Park was constructed in 1856; it became redundant for shipping and navigation when its light was extinguished in 2002.

The islands of the Yorke Peninsula are an intrinsic part of the dreaming for the Narungga people.

Yorke Peninsula experiences a mild maritime climate. Minimum winter temperatures average around 4°C and rarely does the maximum reach 40°C during summer. Average annual rainfall is 350 millimetres near the coast, with the wettest months being May to September. Winds can be quite strong along the coast, and strong offshore winds can create hazardous maritime conditions, particularly during winter and sometimes in spring.

General visitor use at these islands is relatively low and access is mostly by boat. Althorpe Islands Conservation Park is the most difficult to reach, being farther from the coast and often through rough seas. The most regular visitors to the island are DEH staff, volunteers and researchers. To protect important wildlife habitat, particularly for sea-bird populations, Althorpe Island, Haystack Island and Seal Island (extending to low water mark) in Althorpe Islands Conservation Park, and Troubridge Island (extending to low water mark) in Troubridge Island Conservation Park, were afforded Prohibited Area status under the *National Parks and Wildlife Act 1972*. Access to these islands is permitted under controlled conditions, currently implemented either through permission granted by DEH or, in the case of Troubridge Island Conservation Park, the commercial tourism operator that utilises the keepers' cottages as short-term holiday accommodation. The main island at Goose Island Conservation Park is leased by Scotch College, hence most visitors to the park are school students and staff.

This management plan replaces the management plan that was adopted for Troubridge Island Conservation Park in 1995.

1.1 History of Management

When the Althorpe Island lighthouse was automated in 1991 a conservation plan (Australian Construction Services, 1991) was developed to ensure its appropriate conservation. When Althorpe Island was acquired from AMSA in 1993 a Conservation Deed between AMSA and the (then) Minister of Environment and Natural Resources was signed. This deed ensured the island was managed and conserved according to the conservation recommendations outlined in the 1991 conservation plan until a management plan was prepared under the *National Parks and Wildlife Act 1972* that addressed the conservation of the natural and cultural values identified in the 1991 conservation plan.

Since being added to Althorpe Islands Conservation Park in 1997, significant management for biodiversity and heritage conservation has occurred on the main Althorpe Island. With the support of caretakers and then the Friends of Althorpe Islands Conservation Park, biodiversity and heritage conservation programs have been undertaken in sympathy with the 1991 conservation plan, including:

- rubbish clearance and disposal;
- weed control, particularly African Boxthorn (*Lycium ferocissimum*) and Tree Mallow (*Lavatera arborea*);
- Feral Cat (*Felis catus*) eradication;
- repair and maintenance of buildings, machinery, and infrastructure;
- maintenance of gravesites and memorials;
- track maintenance, designation and erection of signs;
- an expedition by the Royal Society of South Australia and South Australian Research and Development Institute; and
- various research projects (some ongoing).

Management at Goose Island Conservation Park has been undertaken by DEH staff and Scotch College, and has focused on African Boxthorn control on that island. There have been various attempts to control Feral Pigeons or Rock Doves (*Columba livia*), with mixed success. Research into tern (*Sterna* spp.) breeding has also been undertaken by the South Australian Research and Development Institute (SARDI). Scotch College is also involved with the monitoring of dolphin populations and behaviour in the waters around Goose Island as part of the Kangaroo Island Dolphin Watch program.

The first management plan for Troubridge Island Conservation Park was adopted in 1995 (National Parks and Wildlife Service, 1995). As a result of that plan, management effort has been directed towards weed control (particularly African Boxthorn), and rubbish clean up and removal. The

former keepers' cottages have been leased to a commercial tourism operator. The encroachment of the sea has meant that much effort by the lessee, DEH staff and volunteers has been directed towards sandbagging and stabilising the buildings. The sandbagging of the buildings has resulted in the temporary stabilisation of the cottages, lighthouse and a concrete water tank, while outbuildings that were no longer required for the functioning of the site have been removed, particularly those that were undermined by the sea and were not of heritage significance. The cottages have been upgraded and maintained, and solar panels have been installed to ensure a reliable power supply. A boardwalk (to allow visitors to view the cormorant (*Phalacrocorax* spp.) rookery) and penguin fencing around the buildings have been erected. Signs have been installed at Edithburgh boat ramp and on the island to inform visitors about the park's significance for nesting sea-birds and the subsequent Prohibited Area status.

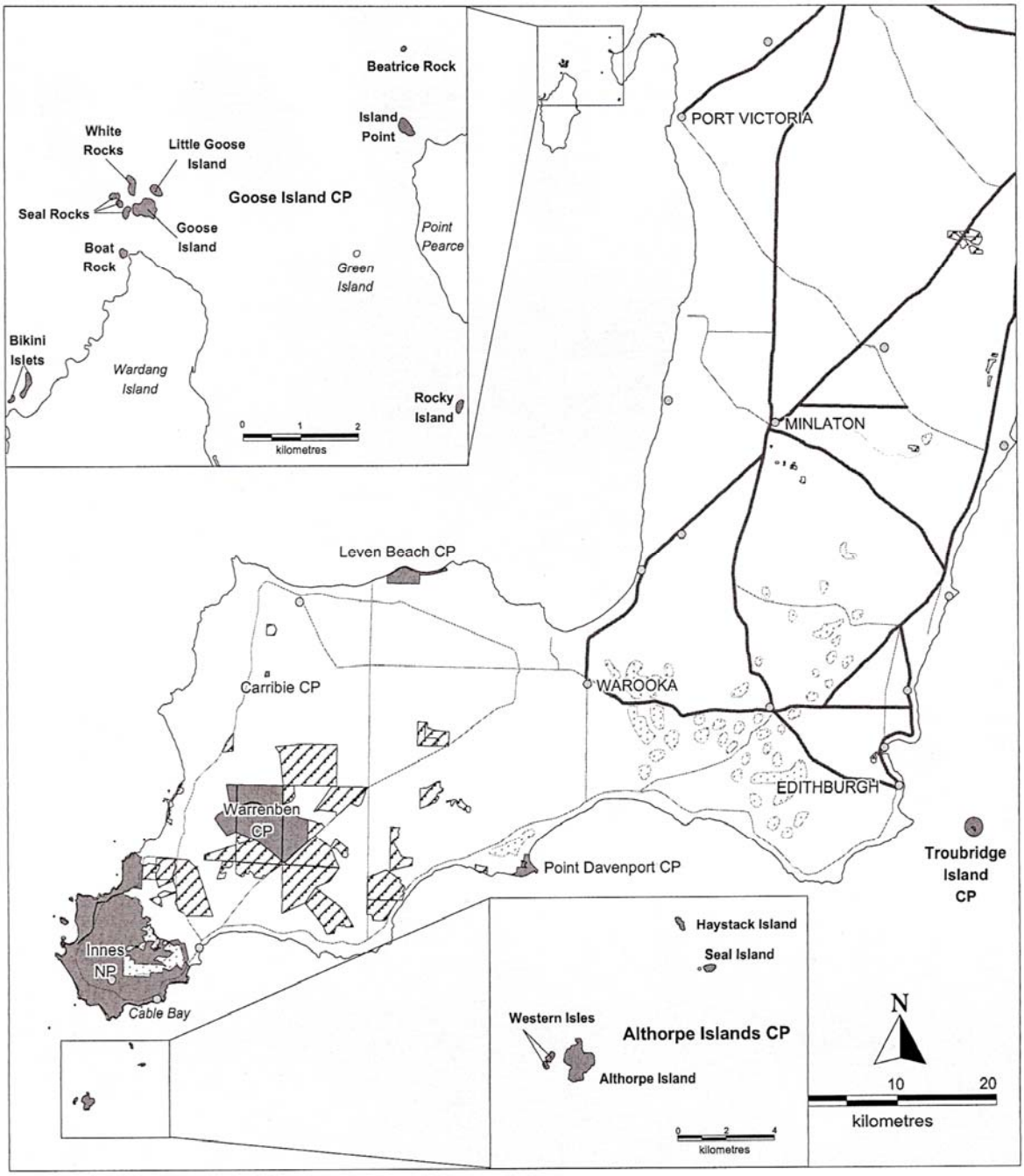

Figure 1

Althorpe Islands, Goose Island and Troubridge Island Conservation Parks

Location

LEGEND

- DEH Reserve
- Heritage Agreement
- CP Conservation Park
- NP National Park
- Drainage
- Major & Minor Roads
- Town

Map designed and created by Reserve Planning using PAMS
Projection: MGA Zone 53 (GDA 94)
Date: June 2008

This map is indicative and only intended for the purposes of this management plan

2 LEGISLATIVE FRAMEWORK

2.1 National Parks and Wildlife Act 1972

Reserves are managed by the Director of National Parks and Wildlife subject to any direction by the Minister for Environment and Conservation or the Chief Executive of the Department for Environment and Heritage (DEH). When managing reserves, the Director is required under section 37 of the *National Parks and Wildlife Act 1972* to have regard to, and provide actions that are consistent with, the following objectives of management stated in the Act:

- preservation and management of wildlife;
- preservation of historic sites, objects and structures of historic or scientific interest within reserves;
- preservation of features of geographical, natural or scenic interest;
- destruction of dangerous weeds and the eradication or control of noxious weeds and exotic plants;
- control of vermin and exotic animals;
- control and eradication of disease of animals and vegetation;
- prevention and suppression of bush fires and other hazards;
- encouragement of public use and enjoyment of reserves and education in, and a proper understanding and recognition of, their purpose and significance;
- generally, the promotion of the public interest; and
- preservation and protection of Aboriginal sites, features, objects and structures of spiritual or cultural significance within reserves.

Section 38 of the Act states that a management plan is required for each reserve. A management plan should set forth proposals in relation to the management and improvement of the reserve and the methods by which it is intended to accomplish the objectives of the Act in relation to that reserve.

The draft plan for Althorpe Islands, Goose Island and Troubridge Island Conservation Parks was released for public consultation in December 2007. At the close of the comment period, 12 submissions were received, raising issues regarding future management of the State Heritage-listed lighthouse keepers' cottages on Althorpe and Troubridge Islands. All comments and concerns were considered by the Northern and Yorke Consultative Committee and forwarded to the South Australian National Parks and Wildlife Council for advice before the plan was presented to the Minister for adoption.

In accordance with the Act, the provisions of this management plan must be carried out and no actions undertaken unless they are in accordance with this plan. In order to achieve this, each year park managers, taking regional and district priorities into account, draw up work programs to implement strategies proposed in management plans. Implementation of these projects is determined by, and subject to, the availability of resources (eg staffing and funding).

2.2 Native Title Act 1993

Native Title describes the rights and interests Aboriginal and Torres Strait Islander People have in land and waters according to their traditional laws and customs. This management plan is released and is adopted subject to any native title rights and interests that may continue to exist in relation to the land and/or waters. Before undertaking any acts that might affect native title, DEH will follow the relevant provisions of the *Native Title Act 1993*.

3 VISION

The vision for Althorpe Islands, Goose Island and Troubridge Island Conservation Parks is the conservation of environmental, cultural and historic values, particularly as they relate to the parks' maritime location, while permitting recreational activities that are consistent with preserving these values.

3.1 Key Values

- Specialised and protected island habitats located in coastal/marine conditions.
- Important feeding and breeding sites for sea-birds, particularly the Little Penguin (*Eudyptula minor*) and Short-tailed Shearwater (*Puffinus tenuirostris*), the state endangered White-bellied Sea-Eagle (*Haliaeetus leucogaster*), Osprey (*Pandion haliaetus*), and Fairy Tern (*Sterna nereis*), and state vulnerable Hooded Plover (*Thinornis rubricollis*).
- Habitat for other native fauna species of conservation significance, including the nationally and state vulnerable Australian Sea-lion (*Neophoca cinerea*), and the state rare Peregrine Falcon (*Falco peregrinus*) and Rock Parrot (*Neophema petrophila*).
- Protect native plant species of conservation significance, including the state vulnerable Australian Broomrape (*Orobanche cernua* var. *australiana*) and the state rare Scaly Poa (*Poa fax*).
- Links with the region's maritime history, with lighthouses and associated infrastructure at Althorpe Islands and Troubridge Island Conservation Parks.

3.2 Key Threats

- Introduced plants (eg African Boxthorn) and their competition with native plant species for space and resources.
- Disruption to sea-bird nesting areas due to inappropriate visitor access.
- Unnaturally high Silver Gull (*Larus novaehollandiae*) populations on Goose Island and Troubridge Island Conservation Parks impacting on the breeding success of other native sea-birds.
- Deteriorating heritage-listed infrastructure on Althorpe Islands and Troubridge Island Conservation Parks leading to public risk issues.
- Further deterioration of keepers' cottages and associated infrastructure, and their potential loss to the sea, on Troubridge Island Conservation Park, given rising sea levels and increased storm surges due to climate change and continued shifting of the island's sands.

4 ZONING

Section 39 of the *National Parks and Wildlife Act 1972* provides for the designation of zones in a reserve. Zoning aims to ensure that public use and management actions remain compatible with the protection of reserve values and constrains the use of land in zones to the conditions specified in an adopted management plan.

The management zones described below, and shown in Figures 2, 3 and 4, establish a framework for the sustainable use of the parks during the life of this plan.

Conservation Zone

The Conservation Zone comprises the majority of the parks' areas. This zone has the primary management objective of conserving biodiversity values. Management activities (eg weed control) will be prioritised within this zone to fulfil that objective.

Recreational activities that are sustainable and compatible with the protection of natural values (eg walking, nature appreciation, interpretation and education) will be permitted using defined tracks and trails. The parks provide important feeding and breeding areas for many species of sea-bird; visitors may be restricted access to these areas, particularly during the breeding season. Signage and/or notices will be installed to notify visitors of access restrictions. These signs should state why access is restricted and provide clear information about the issue/species to which they pertain.

The development of new built structures will not be permitted within the Conservation Zone, other than those necessary to achieve conservation and park management objectives. The installation of signage will be permitted within this zone.

Heritage Zone

The Heritage Zone incorporates those items of national, state and local heritage significance on Althorpe Islands and Troubridge Island Conservation Parks (see Section 7.2 Non-Aboriginal Heritage). For Althorpe Island this includes a lighthouse, keepers' cottages and associated outbuildings, jetty and railway for trolley, and for Troubridge Island the lighthouse and keepers' cottages. This zone will be managed to protect and conserve this maritime history. For Troubridge Island Conservation Park, the Heritage Zone occupies the same area as the Lease Zone (see below).

Works necessary to conserve the buildings will be permitted; for those places listed on the Register of the National Estate and State Heritage Register (see Section 7.2 Non-Aboriginal Heritage), proposed developments may require development approval to ensure they are consistent with heritage principles.

The development of new built structures will not be permitted within the Heritage Zone on Althorpe Islands and Troubridge Island Conservation Parks unless they are in keeping with the heritage values of those areas.

Lease Zone

The Lease Zone comprises those portions of the parks that are currently held under lease (or licence). Terms and conditions of lease agreements vary, but public access can be subject to approval by lessees who take full responsibility for the designated areas and manage the associated assets. Development and building works may be permitted in a Lease Zone, but only if consistent with the lease agreement and park management objectives. Requiring the lessees to undertake actions to reduce threats to biodiversity and help restore natural ecological processes may also be a condition of a lease agreement. Licence conditions on the other hand, do not normally grant tenure to land.

At Althorpe Islands Conservation Park the Australian Maritime Safety Authority (AMSA) leases the land surrounding the lighthouse and lead light on the main Althorpe Island to allow for maintenance of these operational navigation aids (which are owned by AMSA).

The main Goose Island at Goose Island Conservation Park is leased to Scotch College, which uses the island for educational and recreational purposes.

Troubridge Island Conservation Park is the subject of two lease agreements. A commercial tourism business is operated on the island, which provides public access to this Prohibited Area. Ownership of the extinguished lighthouse was transferred from AMSA to (then) Transport SA in 2003, as was the lease agreement for the area of land upon which the lighthouse is situated.

Marine Waters

Nineteen marine parks are proposed to be in place by 2010 (*South Australia's Strategic Plan*, 2007) and may be located in the vicinity of the conservation parks covered in this management plan. The marine parks will be established under the *Marine Parks Act 2007* to further the protection and maintenance of biological diversity and of natural and cultural resources. Many activities, including recreational and commercial activities, will still be allowed within marine parks; however, in order to protect representative habitats, species and ecological features, there will be zones where some activities will not be permitted. For Althorpe Islands and Goose Island Conservation Parks, marine waters, typically to low water mark, are protected within the boundaries of each park, while Troubridge Island Conservation Park encompasses a relatively large intertidal area around the island (Figures 2, 3 and 4).

The *Marine Parks Act 2007* and the *National Parks and Wildlife Act 1972* will be complementary in their goals and objectives. The interaction between National Parks and Wildlife Act reserves and marine parks, where the boundaries may overlap, will be supported by policies to ensure a complementary management framework.

Point Pearce Prospective Aquaculture Zone

Island Point and Rocky Island in Goose Island Conservation Park are located within the Point Pearce prospective aquaculture zone, established under the provisions of the Aquaculture (Zones – Eastern Spencer Gulf) Policy 2005. The zone covers an area of 23,849 hectares and provides for the development of 22 hectares of intertidal mollusc aquaculture. The zone has effect for a period of three years after the date of commencement of the Policy, after which some or all of the area may be declared an Aquaculture Zone or Aquaculture Exclusion Zone, in accordance with the provisions of the *Aquaculture Act 2001*. Should an Aquaculture Zone be declared over any island within Goose Island Conservation Park, DEH will encourage the relevant authority (currently Primary Industries and Resources South Australia (PIRSA) Aquaculture) to establish a one-kilometre buffer zone around the park boundary to protect park values.

Development Plan

The parks covered by this plan are all located in the Land Not Within a Council Area (Coastal Waters) Development Plan (most recently consolidated on 9 August 2007), which does not assign a zoning to the islands. The objectives of the Development Plan include provisions for the protection of offshore islands, their natural features and scenic beauty within and adjoining the islands, and the conservation and preservation of terrestrial and marine flora, fauna and scenery. The Development Plan, which is administered by the Minister responsible for the *Development Act 1993*, does not currently include a zone for conservation purposes. Therefore, it is suggested that when the Land Not Within a Council Area (Coastal Waters) Development Plan is next revised, DEH encourage the establishment of a zone for conservation, and the inclusion of Althorpe Islands, Goose Island and Troubridge Island Conservation Parks within such a zone.

Objectives

Zone the parks to ensure appropriate land use, landscape protection, and the conservation of wildlife habitats and cultural features.

Protect marine biodiversity through the integration of terrestrial and marine management activities.

Ensure that aquaculture activities do not compromise park values.

Strategies

- Designate and adopt the management zones as described in Section 4 Zoning and shown in Figures 2, 3 and 4.
- Develop and maintain effective relationships with the relevant coastal and marine authorities, the local community, and key stakeholders.

- Integrate marine biodiversity management when planning for and undertaking land-based management activities.
- Encourage the establishment of an aquaculture buffer zone around Goose Island Conservation Park to protect park values.
- Ensure that the Minister responsible for the *Development Act 1993* considers including the parks within a more appropriate zone when the Land Not Within a Council Area (Coastal Waters) Development Plan is next reviewed.

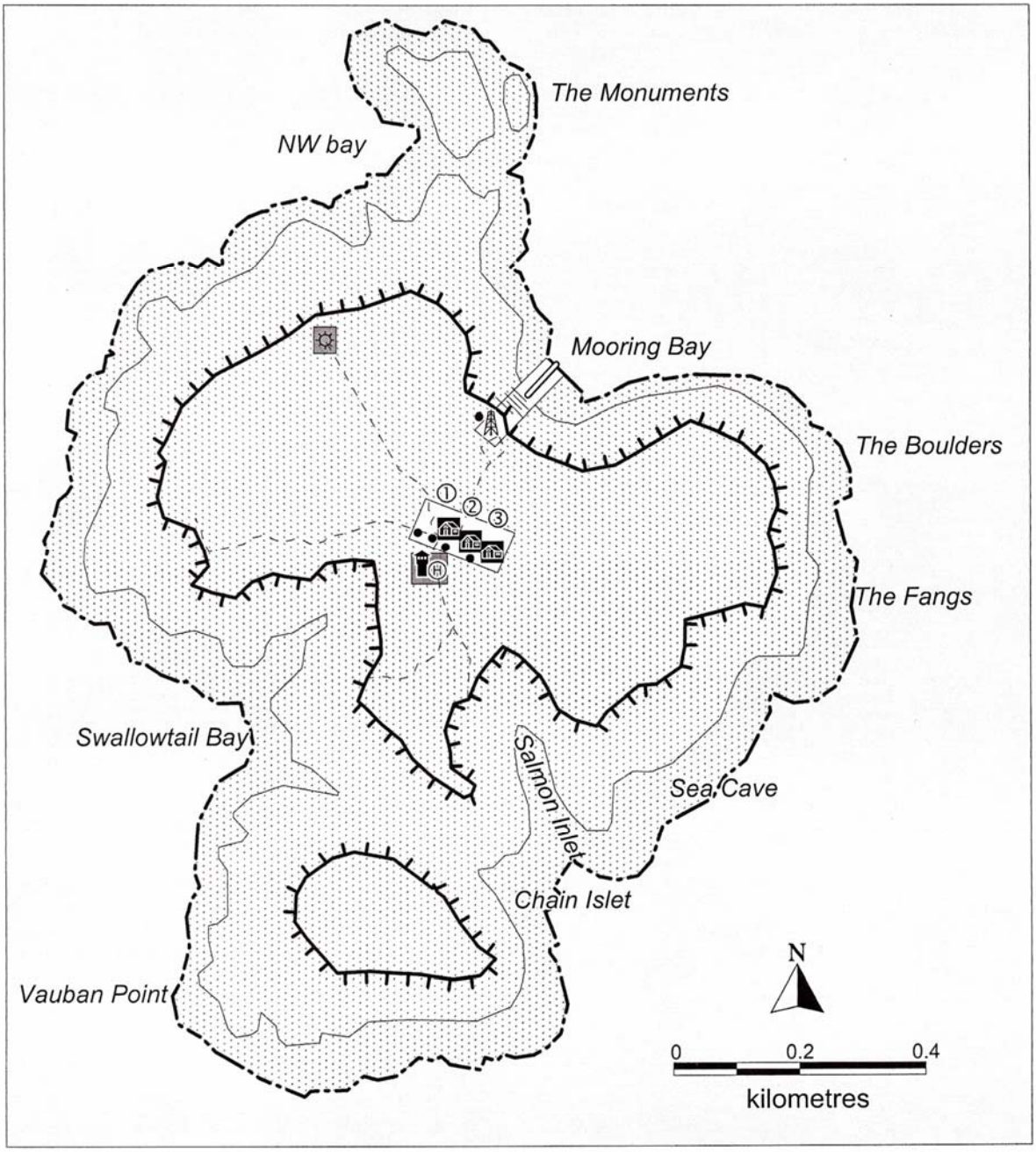

Figure 2

Althorpe Islands Conservation Park

Features and Zoning - Althorpe Island

Map designed and created by
Reserve Planning using PAMS
Projection: Longitude / Latitude (GDA 94)
Date: May 2007

This map is indicative and only intended for the purposes of this management plan

LEGEND

- Conservation Zone
- Heritage Zone
- Lease Zone
- Park Boundary
- Vegetated Plateau
- Jetty
- Walking Trail
- Zig Zag Walking Trail
- Cottage
- Sheds
- Flying Fox
- Lighthouse
- Lead Light
- Helicopter Pad

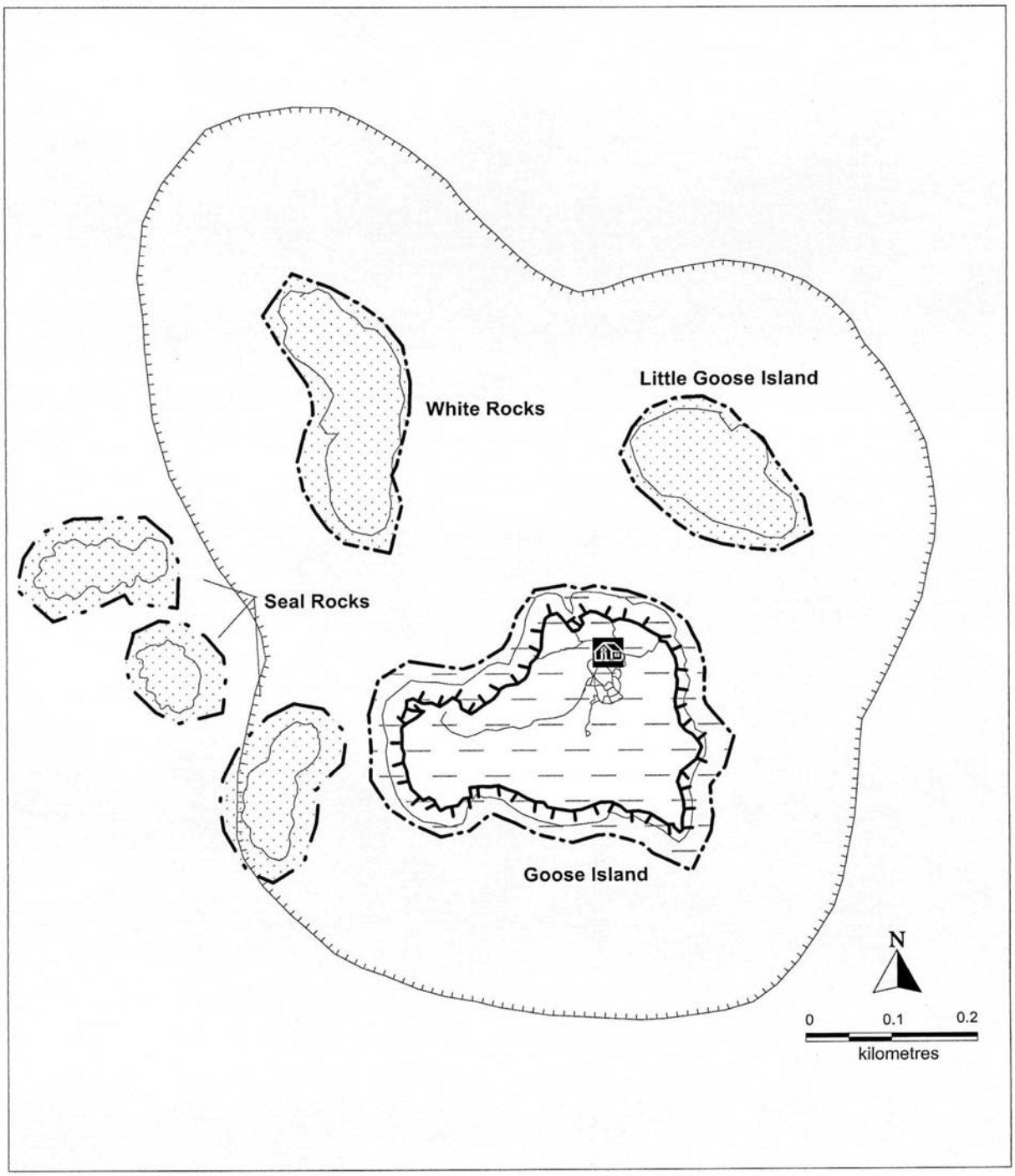

Figure 3

Goose Island Conservation Park

Features and Zoning

Map designed and created by
Reserve Planning using PAMS
Projection: Longitude / Latitude (GDA 94)
Date: May 2007

This map is indicative and only intended for the purposes of this management plan

LEGEND

- Conservation Zone
- Lease Zone
- Goose Island Aquatic Reserve
- Park Boundary
- Vegetated Plateau
- Walking Trail
- Hut

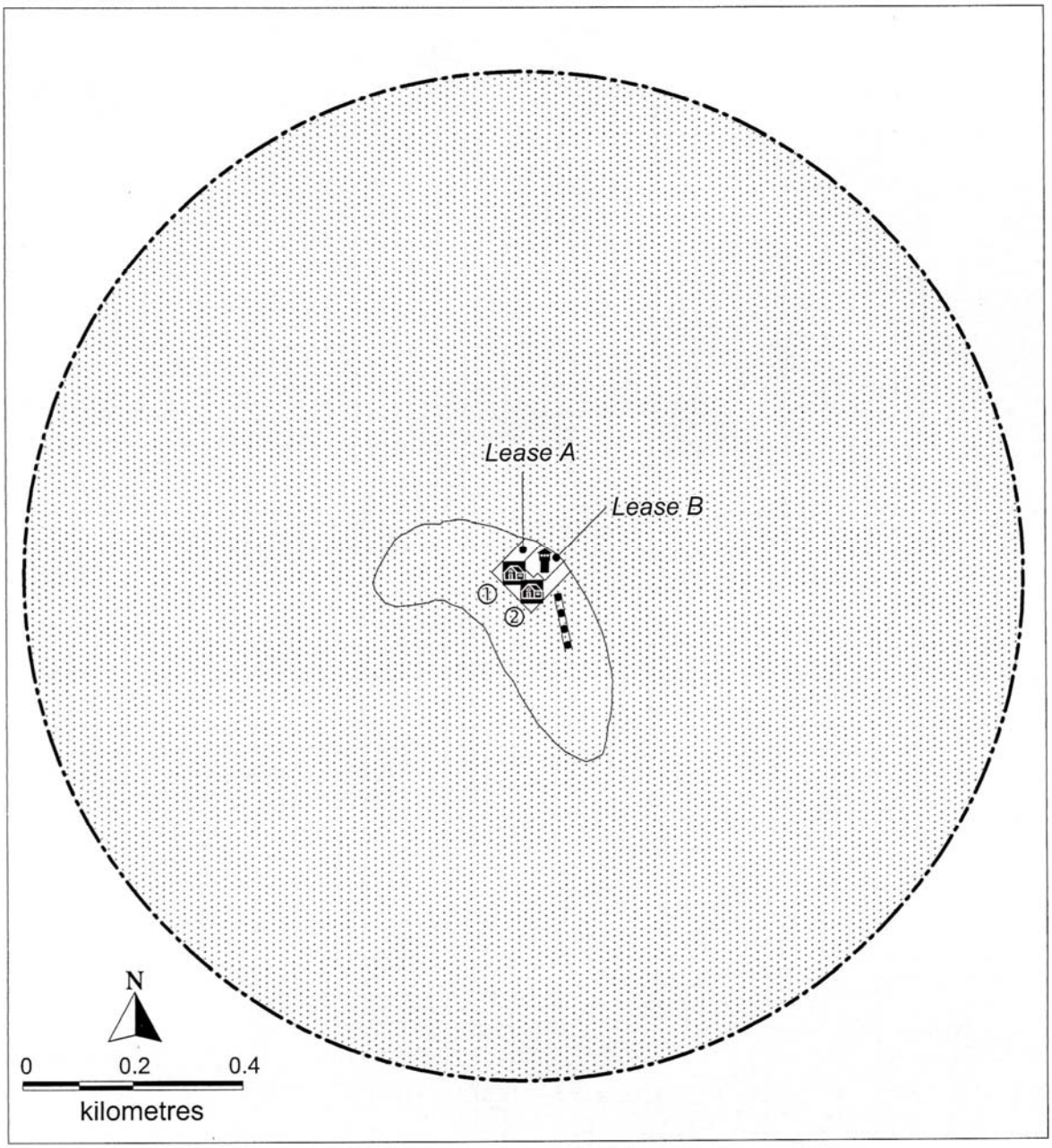

Figure 4

Troubridge Island Conservation Park

Features and Zoning

Map designed and created by
Reserve Planning using PAMS
Projection: MGA Zone 53 (GDA 94)
Date: May 2007

This map is indicative and only intended
for the purposes of this management plan

LEGEND

	Conservation Zone
	Lease Zone
	Park Boundary
Lease A	Commercial Tourism Operation
Lease B	Land around lighthouse
	Raised Boardwalk
	Cottage
	Lighthouse

5 MANAGING NATURAL HERITAGE

5.1 Geology, Soils and Landform

The offshore islands scattered around the Yorke coastline are all remnants of the Australian continental landmass. During previous millennia, when sea levels were much lower, the coastline was several kilometres seaward of its present position in some places. Althorpe Islands, Goose Island and Troubridge Island Conservation Parks were all connected to the mainland at the time of the most recent glaciation (approximately 17,000 years ago) but have since been isolated by rising sea levels and eroded by the elements.

The morphology of the islands in this management plan generally reflects their geological composition and structure. Broadly speaking, the basic rock structure underlying Yorke Peninsula is approximately 500 million years old and was subsequently covered by sand and lime sediments. Some 235 to 200 million years ago, glaciers moved across from a south-easterly direction, flowing out over the waters covering what is now Yorke Peninsula. As they melted they deposited boulders, sands and clay on the sea floor (District Council of Yorke Peninsula, 2005).

The underlying bedrock is resistant to weathering but the softer, overlying limestone tends to erode and there is usually some limited soil formation on most of the rocky islands. The active management of soils is not considered necessary, except in the case of Troubridge Island Conservation Park. However, it is a general proviso of this management plan that soil erosion should be restricted to natural processes and not unduly accelerated by visitor use or management activities (eg pest plant management; see Section 5.2 Vegetation – Native and Introduced).

Althorpe Islands Conservation Park

The visually spectacular Althorpe Islands group has been created by sea erosion and is the remains of granite inselbergs overtopped by a sheet of Bridgewater Formation calcarenite. The rise in sea level left only the summits of these former hills exposed and the sea has since eroded the softer rock away, leaving them with a calcarenite cap surmounting the more resistant granite. On the main Althorpe Island, jointing in the granite base has resulted in chasms and crevasses around the coastline (Robinson et al., 1996).

Seal Island rises to an elevation of 35 metres, Haystack Island to 44 metres, and the main Althorpe Island to 93 metres. Soils developed from the eroded calcarenite tend to be sandy and shallow, but sufficient to support tough maritime vegetation and the shallow burrows of nesting sea-birds (see Section 5.3 Native Fauna). Beach sands of the St Kilda Formation have been deposited near the jetty on the main Althorpe Island (Zang, 2005).

With the removal of Feral Goats (*Capra hircus*) from the main Althorpe Island, the native vegetation is recovering. The walking path that climbs from the jetty to the plateau is degraded and prone to erosion, and is considered a safety risk; this has been addressed by the closure of the walking trail (see Section 8.1 Visitor Access).

Goose Island Conservation Park

Goose Island is the largest of a scattered group of islands that, prior to the rise in sea level, formed a peninsula connecting Point Pearce to Wardang Island (Robinson et al., 1996). These islands are much eroded and rugged, with exposed basement rock showing in places, while elsewhere there are boulders and limestone rubble, in addition to shallow caves and sandy beaches.

The Goose Island group is, for the most part, low-lying, rising to a maximum elevation of 26 metres. A reef of Precambrian metamorphosed sediments runs south to Wardang Island and, at spots where this harder rock outcrops above sea level, retains some of the overlying and softer formations. Goose Island and various other islands in the group are capped with a crust of calcarenite and calcrete, while the associated soils are shallow and comprise mainly calcareous clays and sands.

Troubridge Island Conservation Park

Troubridge Island Conservation Park is different to those previously discussed and is unique in South Australia. The rocky shoals located at the entrance to Gulf St Vincent are thought to have acted as sand traps where, for millennia, tidal flows have deposited extensive banks of sand. The underlying rocks are possibly of Tertiary age (40 to 30 million years) and are associated with sandy

marine limestone outcrops. Troubridge Island is essentially a five metre high vegetated sand spit, the highest point on a broad sand bank surrounded by shallow, intertidal sand flats overlying the rocky formations (Robinson et al., 1996). At low tide the sand flats are exposed for several hundred metres (Department of Environmental and Natural Resources, 1995).

The island's low elevation makes it particularly vulnerable to high seas and tidal influences, and its shape and profile has altered considerably over the years. The lighthouse itself has foundations set on the underlying bedrock, while the keepers' cottages are constructed on pylons embedded in a deep (6 m) layer of sand, and are potentially vulnerable to the incursion of the sea. This problem has been partially addressed by sandbagging and the construction of gabions, much of which has been undertaken by DEH, the lessee and volunteers. Further hydrological and engineering studies might prove useful to provide alternatives such as sand trapping on the north beach. Erosion around the base of the cottages has been further exacerbated by the burrowing behaviour of the island's significant Little Penguin (*Eudyptula minor*) population. Bitumen has been laid around the perimeter of Cottage One and fencing has been constructed around both cottages, which has reduced burrowing activity, although it has not been completely prevented. Investigations should be undertaken to determine a more effective method of sealing the perimeter of the buildings' foundations to prevent penguin burrowing and associated erosion. This may include the extension of the bitumen path. Fencing should be constructed from fine mesh or wood to minimise the chance of trapping or harming seabirds, and should be erected when Little Penguins are not breeding (typically during March). Monitoring should take place to ensure that no seabirds are harmed by the fencing.

The vegetation on Troubridge Island Conservation Park plays a very important role in keeping this dynamic area of shifting sands above the sea (Robinson et al., 1997), and the need to establish and maintain vegetative cover on the island was a major concern of the early lighthouse keepers. This requirement is no less today. An elevated boardwalk has been developed to minimise human-induced erosion through disturbance to vegetation, and dead African Boxthorn (*Lycium ferocissimum*) plants have been retained to stabilise the sand until indigenous species can be re-established as part of an ongoing revegetation program (see Section 5.2 Vegetation – Native and Introduced).

Objective

Protect the rocks and soils on the parks from adverse impacts and limit erosion to natural processes.

Strategies

- Consider soil type and properties when planning for and undertaking park management activities to minimise the risk of accelerated erosion.
- To maintain soil stability, ensure removal of pest plants (particularly African Boxthorn) uses appropriate control techniques and is complemented by natural regeneration and/or active revegetation. Where necessary, retain vegetation, even if dead, as a preventative measure against soil erosion.
- For the remainder of the current lease agreement continue to liaise and work cooperatively with the Troubridge Island Conservation Park lessee and volunteers to continue to undertake sandbagging and the construction of gabions, to minimise the incursion of the sea to the island's buildings.
- Explore alternative options suggested by hydrological and engineering studies if feasible.
- Undertake investigations to determine a more effective method of sealing the perimeter of the buildings on Troubridge Island Conservation Park from penguins, to prevent burrowing and hence exacerbated erosion. Appropriate measures should be taken to avoid undue harm to seabirds and penguins.
- Maintain, improve and repair access tracks and walking trails. Close off tracks that are a safety risk or traverse environmentally sensitive areas.
- Install appropriate signage to inform visitors of the access restrictions imposed for soil conservation or other safety issues.
- Dependant on any future leases of the heritage infrastructure, review the program of sandbagging to protect infrastructure at Troubridge Island Conservation Park.

5.2 Vegetation – Native and Introduced

On most islands included in this management plan, shrubland associations have evolved under difficult conditions, including poor soil quality and varying degrees of exposure to strong winds and salt spray. A minority are rocky reefs with little or no vegetation, but on the larger islands, vegetation communities are quite well developed. In most situations these communities have suffered severely from human activities and the deliberate or inadvertent introduction of exotic species. Consequently, invasive weed species have come to dominate many of the islands (an asterisk (*) denotes introduced plant species in this section).

Since proclamation of these parks, attempts have been made to manage vegetation (at least on the main islands), typically by controlling the more invasive introduced species. It is the recommendation of this management plan that priority be given to continuing work to help restore natural biodiversity. However, given the need to maintain soil stability, such efforts should be undertaken with due care. Ideally, natural regeneration should be encouraged at the same time, or if unlikely, revegetation should be undertaken with appropriate native species from locally (mainland) collected seed. As a general prescription, the condition and composition of native vegetation should be regularly monitored to determine trends and assess the success or otherwise of management initiatives.

Althorpe Islands Conservation Park

More than 60 native plant species have been recorded at Althorpe Islands Conservation Park. The two smaller islands, Haystack and Seal Islands, have relatively simple plant communities, each with less than 15 native species. Common species include Marsh Saltbush (*Atriplex paludosa* ssp. *cordata*), Round-leaved Pigface (*Disphyma crassifolium* ssp. *clavellatum*), Grey Samphire (*Halosarcia halocnemoides* ssp. *halocnemoides*) and Nitre-bush (*Nitraria billardierei*). Common Iceplant (**Mesembryanthemum crystallinum*) is the only introduced species recorded on Haystack and Seal Islands, which is a reflection of their inaccessibility and subsequent lack of human occupation.

Five distinct vegetation communities are present on the main Althorpe Island: Nitre-bush low shrubland; Marsh Saltbush low open shrubland; Heath Bluebush (*Maireana oppositifolia*)/Marsh Saltbush low shrubland; Black-seeded Samphire (*Halosarcia pergranulata*) low closed shrubland; and Boobialla (*Myoporum insulare*) low open shrubland (Lawley and Shepherd, 2005). More than 60 native plant species have been recorded and Scaly Poa (*Poa fax*) is the only species of conservation significance, being listed as rare in South Australia. Interestingly, Short-awned Wheat-grass (*Elymus multiflorus*), a perennial species found at relatively few sites in South Australia, has been recorded on Althorpe Island.

More than a century of human occupation, by lighthouse keepers and their families, on Althorpe Island has altered the native vegetation from its pre-settlement condition. Domestic Goats (*Capra hircus*), which subsequently turned feral, degraded the condition of native vegetation and contributed to the increase of introduced grasses on the island (Lawley and Shepherd, 2005; Pavy, 2000). The introduction of sheep, wallabies and even a horse to the island at various times has also contributed to total grazing pressure (Lawley and Shepherd, 2005; Pavy, 2000). Grasses were introduced in the early 1960s to stabilise the island's airstrip (now closed), and an introduced grassland community, with species such as Bearded Oat (**Avena barbata*), Great Brome (**Bromus diandrus*) and Perennial Ryegrass (**Lolium perenne*), now dominates the airstrip and land around the infrastructure (Lawley and Shepherd, 2005; Pavy, 2000). Mowing of the airstrip ceased in 2001, which has resulted in some regeneration of native plant species in this area (mainly Marsh Saltbush). Vegetation composition in this grassland community should be regularly monitored, and new species recorded.

African Boxthorn (**Lycium ferocissimum*) was introduced to Althorpe Island in the 1930s. Following the removal of Feral Goats in 1990 (see Section 5.4 Introduced Animals), African Boxthorn proliferated and became abundant in virtually all habitats (Lawley and Shepherd, 2005; Lawley et al., 2005). An intense African Boxthorn eradication program has been implemented since 1998, with the assistance of the Friends of Althorpe Islands Conservation Park, inmates from Cadell Training Centre and other volunteers, which has seen the removal of more than 10,000 mature plants (Lawley et al., 2005). The removal of African Boxthorn has had a positive effect on native flora, by allowing native shrubs, particularly mat plants (eg Ruby Saltbush (*Enchylaena tomentosa* var. *tomentosa*)), to re-colonise the bare patches created by removal (Lawley et al., 2005). African Boxthorn control remains a management priority at Althorpe Islands Conservation Park, with the

focus now on seedling removal to prevent reinvasion. Such control should be undertaken with care, to avoid disturbance to nesting sea-birds (see Section 5.3 Native Fauna). The response of native vegetation to African Boxthorn control should continue to be monitored on a regular basis.

Tree Mallow (**Lavatera arborea*) and ornamental garden plants have also been problematic weed species on Althorpe Island, and will require ongoing control programs to manage.

A vegetation management plan should be prepared for Althorpe Islands Conservation Park to ensure weed control is strategically undertaken, so as to promote natural regeneration of native vegetation.

Goose Island Conservation Park

Although more than 40 native plant species have been recorded at Goose Island Conservation Park, the condition of native vegetation is variable across the islands, the majority of which are degraded with introduced plant species dominating. More than 20 introduced plant species have been recorded on the islands.

Island Point (see Figure 1) is probably most representative of the structure and diversity of native vegetation that would have occurred pre-settlement on the park's other islands. Two shrubland communities occur: a Marsh Saltbush-dominated low heath on the slopes facing the open sea; and a taller shrubland in the shelter provided by the calcrete rim on the eastern half of the island, dominated by Common Boobialla or Native Juniper (*Myoporum insulare*) (Robinson et al., 1996). This island also conserves the state vulnerable Australian Broomrape (*Orobanche cernua* var. *australiana*). Relatively few introduced plant species are present on Island Point, although African Boxthorn and Common Iceplant do occur.

Little Goose Island is dominated by African Boxthorn, although native vegetation is less degraded than on the main Goose Island. White Rocks is sparsely vegetated with a few African Boxthorn bushes, Sea Celery (*Apium prostratum* var. *prostratum*) and Two-horned Sea Rocket (**Cackile maritima* ssp. *maritima*). Seal Rocks is unvegetated. Rocky Island supports some scattered Mueller's Saltbush (*Atriplex muelleri*), African Boxthorn and Tree Mallow, and there are a few clumps of Beaded Samphire (*Sarcocornia quinqueflora*) and Austral Seablite (*Suaeda australis*) (Robinson et al., 1996).

Vegetation on the main Goose Island is severely degraded, probably from a previous era of Feral Goat grazing (Robinson et al., 1996). African Boxthorn dominates in tall thickets. Other introduced plant species include Common Iceplant, Capeweed (**Arctotheca calendula*), Great Brome grass (**Bromus diandrus*), Slender Thistle (**Carduus tenuiflorus*), False Caper (**Euphorbia terracina*), and Hedge Mustard (**Sisymbrium officinale*). The most intact native plant communities are found around the coastline, where there are clumps of Nitre-bush and pockets of Marsh Saltbush shrubland. Other native species recorded include Ruby Saltbush, Australian Hollyhock (*Malva behriana*), Climbing Lignum (*Muehlenbeckia adpressa*), Variable Groundsel (*Senecio lautus*) and Bower Spinach (*Tetragonia implexicoma*).

Goose Island has been leased by Scotch College since 1969. The current lease dates from 1992 and will expire in December 2027 (see Section 9.1 Leases and Licences). African Boxthorn control has been undertaken, in liaison with the lessee, with some success. A vegetation management plan should be prepared for Goose Island Conservation Park to ensure weed control is strategically undertaken, so as to promote natural regeneration of native vegetation and conserve populations of Australian Broomrape.

From time to time, Aboriginal persons may want to pick native fruits for 'bush tucker', or gather plant materials for craftwork. Such traditional uses would be permitted by virtue of a proclamation under section 68D of the *National Parks and Wildlife Act 1972*, provided they are culturally appropriate and ecologically sustainable. As at 2008 taking of native plants on the park is not being contemplated and such permission has not been granted.

Troubridge Island Conservation Park

Although some native plants are present (less than 20 species), Troubridge Island Conservation Park is dominated by introduced plants. Native species include Marsh Saltbush, Nitre-bush, Grey Saltbush (*Atriplex cinerea*), Coast Ballart (*Exocarpos syrtricola*) and Coast Daisy-bush (*Olearia axillaris*). Introduced species include African Boxthorn, Tree Mallow, Common Iceplant, Winter Grass (**Poa annua*), Stinging Nettle (**Urtica urens*) and ornamental garden plants.

Regardless of origin, the island's vegetation plays a very important role in soil stabilisation (see Section 5.1 Geology, Soils and Landform). Hence, any management programs to control introduced species need to be undertaken in conjunction with natural regeneration and/or active revegetation; some revegetation has already occurred. A vegetation management plan should be prepared to focus management programs undertaken on the park.

Objectives

Protect and progressively restore the remnant native vegetation on the parks to a more natural condition and reduce threats to biodiversity.

Control, and eradicate where possible and appropriate, introduced plant species within the parks.

Strategies

- Prepare and implement vegetation management plans for each park, to guide management programs that focus on weed control in conjunction with natural regeneration and/or active revegetation.
- Ensure each vegetation management plan contains strategic directions to regularly monitor the condition of native vegetation and its response to weed control, and the distribution and abundance of plant species of conservation significance.
- Ensure vegetation management activities are undertaken with care, to ensure soil stability is maintained, sea-bird habitats are not disturbed and threatened species populations are protected.
- Regularly monitor the natural regeneration of native plant species in the non-native grassland community at Althorpe Islands Conservation Park.
- Encourage and support Friends groups, other volunteers and organisations, and licensees to undertake vegetation rehabilitation and monitoring programs in collaboration with DEH staff, as outlined in the vegetation management plans.

5.3 Native Fauna

While their native flora may not be particularly remarkable, some of these islands support significant populations of native fauna species, particularly sea-birds. Sea-birds act as an important link between marine and terrestrial ecosystems; they are long-lived and considered good indicators of the health of the surrounding marine environment and resources. Althorpe Islands, Goose Island and Troubridge Island Conservation Parks offer breeding habitat for many sea-bird species, some of which are not known to breed anywhere else in the Gulf St Vincent (B Page, pers. comm., 2005). Feral predators are largely absent on these islands (but see Section 5.4 Introduced Animals), resulting in elevated sea-bird breeding success, although inappropriate visitor activity can affect this success. A few reptiles are present on the islands, although no native land mammals have been recorded. The Southern Brown Bandicoot (*Isoodon obesulus*; SA:V), Greater Stick-nest Rat (*Leporillus conditor*; SA:V) and Bush Rat (*Rattus fuscipes*) are recorded as having recently become extinct on Althorpe Island (Lawley and Shepherd, 2005). An explanation of the conservation status codes used in this section is provided in Appendix B.

A number of sea-bird species recorded for these islands are listed migratory species under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The List of Migratory Species includes all migratory species that are native to Australia and are listed under the provisions of the Bonn Convention, China-Australia Migratory Birds Agreement (CAMBA), Japan-Australia Migratory Birds Agreement (JAMBA), and any other international convention the Australian Government enters into. The protection of migratory bird flyways and important habitat should be taken into account when planning and undertaking conservation and management activities on the islands.

In parks of this type, where biodiversity conservation and ensuring the long-term survival and protection of threatened species are major goals, repeat fauna surveys, ongoing research and regular monitoring of wildlife populations is desirable and should be encouraged. Based on the information gathered, species management plans (eg recovery plans) can be developed and then implemented as necessary, ideally as part of broader-based programs. Personnel from the South Australian Research and Development Institute (SARDI) and the University of Adelaide have been conducting research on the parks since 2003; scientific research is administered through a DEH permit system.

Althorpe Islands Conservation Park

More than 40 species of native bird have been recorded at Althorpe Islands Conservation Park, many of which are significant (Table 1). On the main Althorpe Island the most common bird species present during the warmer months is the migratory Short-tailed Shearwater (*Puffinus tenuirostris*). The local population is estimated to comprise more than 11,000 breeding pairs, whose ground nests are densely populated across the plateau. The feeding ecology of the Short-tailed Shearwater population is the subject of ongoing research by SARDI. The White-bellied Sea-Eagle (*Haliaeetus leucogaster*; SA:E; YP:V) nests on Althorpe and Haystack Islands. If disturbed during nesting this species has been known to abandon its nest, and cease its breeding effort. Access throughout the breeding season (June to December) should be controlled to minimise disturbance to sea-bird breeding on the island, including the White-bellied Sea-Eagle, Short-tailed Shearwater, Osprey (*Pandion haliaetus*; SA:E; YP:R) and White-faced Storm-Petrel (*Pelagodroma marina*). A small Little Penguin population is also present on the northern side of Althorpe Island. Emergency access by AMSA to attend to light outages will be permitted to minimise navigational risks.

The other islands (particularly Seal Island and the Western Isles) within Althorpe Islands Conservation Park also support numerous species of sea-bird, including the Little Penguin (*Eudyptula minor*), Sooty Oystercatcher (*Haematopus fuliginosus*; SA:R; YP:U), Silver Gull (*Larus novaehollandiae*), Pacific Gull (*L. pacificus*; YP:U), Rock Parrot (*Neophema petrophila*; SA:R; YP:R), Black-faced Cormorant (*Phalacrocorax fuscescens*), and Crested (*Sterna bergii*) and Fairy Tern (*S. nereis*; SA:E; YP:V). The inaccessibility of these islands is such that the breeding colonies are protected from human disturbance, and it is important that these islands continue to be protected to sustain their relatively high biodiversity values.

Table 1: Significant Bird Species Recorded at Althorpe Islands Conservation Park.

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS[#]		Migratory Species[^]
		SA	YP	
Arenaria interpres	Ruddy Turnstone	R		Bonn, CAMBA, JAMBA
Cereopsis novaehollandiae	Cape Barren Goose	R		
Falco peregrinus	Peregrine Falcon	R	R	
Gliciphila melanops	Tawny-crowned Honey-eater		U	
Haematopus fuliginosus	Sooty Oystercatcher	R	U	
Halcyon sancta	Sacred Kingfisher		R	
Haliaeetus leucogaster	White-bellied Sea-Eagle	E	V	CAMBA
Larus pacificus	Pacific Gull		U	
Neophema petrophila	Rock Parrot	R	R	
Pandion haliaetus	Osprey	E	R	Bonn
Puffinus tenuirostris	Short-tailed Shearwater			JAMBA
Sterna bergii	Crested Tern			JAMBA
Sterna nereis	Fairy Tern	E	V	

[#] See Appendix B for Conservation Status Codes

[^] Species listed under the Bonn Convention, CAMBA, JAMBA and other agreements Australia is party to

Although not common, the Four-toed Earless Skink (*Hemiergis peronii*) and Marbled Gecko (*Christinus marmoratus*) have been recorded on Althorpe Island and the Western Isles.

Australian Sea-lions (*Neophoca cinerea*; AUS:V; SA:V) haul out at Althorpe, Haystack and Seal Islands, and the Western Isles, and possibly breed at the latter two (Department of the Environment and Heritage, 2005). A thriving colony of New Zealand Fur Seals (*Arctocephalus forsteri*) occupies a cove on the eastern end of Althorpe Island. Historical records indicate that commercial sealing commenced around these islands in 1815 and continued to the end of the 19th century (Radford, 2005). While no longer threatened by hunting, other threats, such as the fishing industry, human disturbance, oil spills and disease, have the potential to hinder the recovery of these species, particularly the Australian Sea-lion, which appears less resilient and slower to recover than the New

Zealand Fur Seal (Shaughnessy, 1999; Dennis and Shaughnessy, 1996). Most impacts on seal populations are beyond the scope of this management plan to address. However, the Prohibited Area status of Althorpe Island, Haystack Island and Seal Island to low water mark should minimise human disturbance to the colonies at Althorpe Islands Conservation Park.

Goose Island Conservation Park

More than 40 species of native bird have been recorded at Goose Island Conservation Park, including 13 species of conservation significance and seven migratory species (Table 2). The main Goose Island provides habitat for a variety of sea-bird species, such as Black-faced Cormorants, Little Penguins, Pied Cormorants (*Phalacrocorax varius*), Pied Oystercatchers (*Haematopus longirostris*; SA:R; YP:U) and Sooty Oystercatchers (SA:R). A healthy population of Crested Terns inhabit the island, with between 2,000 and 4,000 breeding pairs present. Silver Gulls also breed in large numbers and this population appears to be increasing, which may be detrimental to the breeding success of other native sea-birds, particularly through increased egg predation. Further research is required to identify the causes of elevated Silver Gull numbers and develop possible solutions. If such research determines that gull numbers should be reduced and that culling is the only practicable method of controlling the population and meeting ecological objectives, such management may be undertaken in accordance with section 38(10)(a) of the *National Parks and Wildlife Act 1972*.

Table 2: Significant Bird Species Recorded at Goose Island Conservation Park.

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS[#]		Migratory Species[^]
		SA	YP	
Arenaria interpres	Ruddy Turnstone	R		Bonn, CAMBA, JAMBA
Calamanthus cautus	Shy Heath-wren	R	U	
Calidris acuminata	Sharp-tailed Sandpiper			Bonn, CAMBA, JAMBA
Calidris ruficollis	Red-necked Stint			Bonn, CAMBA, JAMBA
Calidris tenuirostris	Great Knot	R		Bonn, CAMBA, JAMBA
Gliciphila melanops	Tawny-crowned Honeyeater		U	
Haematopus fuliginosus	Sooty Oystercatcher	R	U	
Haematopus longirostris	Pied Oystercatcher	R	U	
Haliaeetus leucogaster	White-bellied Sea-Eagle	E	V	CAMBA
Larus pacificus	Pacific Gull		U	
Neophema petrophila	Rock Parrot	R	R	
Petroica goodenovii	Red-capped Robin		U	
Phylidonyris albifrons	White-fronted Honeyeater		U	
Sterna bergii	Crested Tern			JAMBA
Sterna caspia	Caspian Tern			CAMBA, JAMBA
Sterna nereis	Fairy Tern	E	V	
Thinornis rubricollis	Hooded Plover	V	V	

[#] See Appendix B for Conservation Status Codes

[^] Species listed under the Bonn Convention, CAMBA, JAMBA and other agreements Australia is party to

The shrubland communities support a variety of other bird species, such as Nankeen Kestrels (*Falco cenchroides*), Singing Honeyeaters (*Lichenostomus virescens*) and Silvereyes (*Zosterops lateralis*). The Goose Island lessee is aware of the sea-bird colonies and will continue to be encouraged to avoid the nesting sites, particularly during the breeding season.

Little Goose Island has large breeding colonies of Pied Cormorants and populations of Crested Terns, Little Penguins and Silver Gulls, all of which represent significant populations in the area. Black-faced Cormorants breed and roost on White Rocks and Pacific Gulls are also known to breed there. Seal Rocks offers roosting sites for both Black-faced and Pied Cormorants, and Rocky Island supports large nesting and breeding colonies of Black-faced Cormorants. Other confirmed nesting species include Crested Terns and Caspian Terns (*Sterna caspia*). Given the Silver Gull population from main Goose Island is at an elevated level, it is likely that the Little Goose Island

population is also increasing, and therefore may also pose a risk to the breeding success of other native sea-birds on the surrounding islands. Furthermore, Feral Pigeon numbers in the area are believed to be displacing native birds on the islands, and are the subject of ongoing control works (see Section 5.4 Introduced Animals).

The reptile population of the Goose group includes Marbled Geckoes, three species of skink and Sleepy Lizards (*Tiliqua rugosa*). Tiger Snakes (*Notechis scutatus*) have also been recorded in this area.

The Australian Sea-lions that haul out on Goose Island and White Rocks are a special feature of this park (Department for Environment and Heritage, 2005).

Under section 68D of the *National Parks and Wildlife Act 1972*, Aboriginal persons are permitted to carry out traditional hunting on the park with due regard to public safety. As at 2008 hunting of native wildlife (eg egg harvesting) on the park is not being contemplated and such permission has not been granted.

Troubridge Island Conservation Park

Despite its small land area Troubridge Island Conservation Park is a haven for a variety of nesting sea-birds and their protection was the primary reason for declaring the island a Prohibited Area. Almost 60 native bird species have been recorded at the park; 21 species are of conservation significance and 22 species are listed as migratory (Table 3).

Troubridge Island Conservation Park supports a very healthy population of Little Penguins, which is estimated to comprise between 2,000 and 3,000 individuals. Scientific research into the feeding ecology of the park's Little Penguins has been conducted by SARDI since 2003; this research is ongoing. Little Penguins have come to rely on African Boxthorn (*Lycium ferocissimum*) bushes as nesting habitat. While boxthorn eradication is a key objective for the park (see Section 5.2 Vegetation – Native and Introduced), dead bushes should be left *in situ* until native vegetation can provide appropriate nesting habitat for the penguins. In the past Little Penguins burrowed under the keeper's cottages, leading to the exacerbation of erosion around the buildings' foundations. Penguin fencing has since been installed and maintained around the foundations, and has reduced but not prevented burrowing activity. Investigations should be undertaken to determine a more effective method of sealing the perimeter of the buildings' foundations to prevent penguin burrowing and hence exacerbated erosion.

Colonies of Black-faced Cormorants, Caspian, Crested and Fairy Terns, Pacific Gulls, Pied Cormorants and Silver Gulls occupy the majority of the eastern and southern parts of Troubridge Island Conservation Park. The Crested Tern population is considerable, comprising an estimated 2,000 to 4,000 breeding pairs. Threats to these colonies include human disturbance, particularly during the breeding season, rising sea-levels associated with storm surge events and the predicted impact of climate change, elevated Silver Gull numbers leading to increased egg predation, and displacement of suitable habitat by pest plants such as African Boxthorn.

To conserve the biodiversity of Troubridge Island Conservation Park it is essential that visitor access and activities, and management activities are undertaken in a manner that minimises the risk of disturbance to the sea-bird colonies, particularly during the breeding season. Controlled visitor access should continue to be permitted for the life of the current, and any future, commercial tourism operation on the park (see Section 8.3 Commercial Tourism) or through DEH permit. The lessee should be aware of the conservation values of the park and the need to protect sea-bird colonies from human disturbance. Furthermore, the lessee should promote the conservation values of the park to all visitors brought to the island so the requirement for the access restrictions is understood.

Management activities should be undertaken during a period that is least likely to impact the sea-bird colonies, ideally during late February to March, which is after the Caspian Terns, Crested Terns, Oystercatchers and Pacific Gulls have finished breeding, the Little Penguins have finished moulting and the cormorants have not begun breeding (B Page, pers. comm., 2005).

Table 3: Significant Bird Species Recorded at Troubridge Island Conservation Park.

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS[#]		Migratory Species[^]
		SA	YP	
Actitis hypoleucos	Common Sandpiper	R		Bonn, CAMBA, JAMBA
Arenaria interpres	Ruddy Turnstone	R		Bonn, CAMBA, JAMBA
Calidris acuminata	Sharp-tailed Sandpiper			Bonn, CAMBA, JAMBA
Calidris alba	Sanderling	R		Bonn, CAMBA, JAMBA
Calidris canutus	Red Knot			Bonn, CAMBA, JAMBA
Calidris ferruginea	Curlew Sandpiper			Bonn, CAMBA, JAMBA
Calidris melanotos	Pectoral Sandpiper	R		Bonn, JAMBA
Calidris ruficollis	Red-necked Stint			Bonn, CAMBA, JAMBA
Calidris tenuirostris	Great Knot	R		Bonn, CAMBA, JAMBA
Cereopsis novaehollandiae	Cape Barren Goose	R	R	
Charadrius bicinctus	Double-banded Plover			Bonn
Charadrius mongolus	Mongolian Plover	R		Bonn, CAMBA, JAMBA
Falco peregrinus	Peregrine Falcon	R	R	
Gallirallus philippensis	Buff-banded Rail		R	
Gliciphila melanops	Tawny-crowned Honeyeater		U	
Haematopus fuliginosus	Sooty Oystercatcher	R	U	
Haematopus longirostris	Pied Oystercatcher	R	U	
Halcyon sancta	Sacred Kingfisher		R	
Haliaeetus leucogaster	White-bellied Sea-Eagle	E	V	CAMBA
Larus pacificus	Pacific Gull		U	
Limicola falcinellus	Broad-billed Sandpiper			Bonn, CAMBA, JAMBA
Limosa lapponica	Bar-tailed Godwit	R		Bonn, CAMBA, JAMBA
Neophema elegans	Elegant Parrot	R		
Neophema petrophila	Rock Parrot	R	R	
Pluvialis squatarola	Grey Plover			Bonn, CAMBA, JAMBA
Psephotus haematonotus	Red-rumped Parrot		U	
Stercorarius parasiticus	Arctic Skua			JAMBA
Sterna anaethetus	Bridled Tern			CAMBA, JAMBA
Sterna bergii	Crested Tern			JAMBA
Sterna caspia	Caspian Tern			CAMBA, JAMBA
Sterna nereis	Fairy Tern	E	V	
Thinornis rubricollis	Hooded Plover	V	V	
Tringa glareola	Wood Sandpiper	R		Bonn, CAMBA, JAMBA
Tringa nebularia	Common Greenshank			Bonn, CAMBA, JAMBA
Tringa stagnatilis	Marsh Sandpiper			Bonn, CAMBA, JAMBA

[#] See Appendix B for Conservation Status Codes

[^] Species listed under the Bonn Convention, CAMBA, JAMBA and other agreements Australia is party to

Increasing numbers of Silver Gulls appears to be a statewide phenomenon and the large number of gulls breeding at Troubridge Island Conservation Park is an emerging issue. The numbers of Silver Gulls on Troubridge Island have not been accurately surveyed but observations (and some scientific data) indicate that numbers are generally increasing to the detriment of other species, particularly Crested Terns as Silver Gulls are known to prey on tern chicks and rob adult terns of their prey (L. McLeay, pers. comm., 2008). Further research is required to identify the causes and develop possible solutions. If such research determines that gull numbers should be reduced and that culling is the only practicable method of controlling the population and meeting ecological objectives, such management may be undertaken in accordance with section 38(10)(a) of the *National Parks and Wildlife Act 1972*.

Marbled Geckos and Sleepy Lizards have been recorded on Troubridge Island Conservation Park, but there are no resident native mammals.

Objectives

Protect and conserve native fauna within the parks.

Maintain natural breeding conditions for threatened species through the protection of breeding areas and important habitat.

Protect the breeding and haul-out sites of the Australian Sea-lion and New Zealand Fur Seal, and minimise disturbance to the colonies.

Strategies

- Minimise human disturbance to the Australian Sea-lion and New Zealand Fur Seal colonies at Althorpe Islands and Goose Island Conservation Parks by controlling visitor access.
- Protect sea-bird colonies through the promotion of the conservation values of the parks and controlling visitor access. Limit/restrict access during the critical egg-laying periods to minimise the risk of nest abandonment or disturbance.
- Investigate options to more effectively protect the perimeter of the buildings on Troubridge Island Conservation Park from the burrowing actions of Little Penguins to prevent erosion.
- Protect and restore the Little Penguin nesting habitat on Troubridge Island Conservation Park; until native vegetation re-establishes, maintain those African Boxthorn bushes used by Little Penguins for nesting.
- Promote and support research to identify the causes of the elevated and increasing Silver Gull population on the parks, and to develop possible solutions. If necessary, reduce the size of the Silver Gull populations to manage population numbers and to meet ecological objectives.
- Under DEH permit, encourage and support volunteer groups and other individuals to undertake fauna surveys, research and population monitoring, provided it is not to the detriment of the animal populations involved.

5.4 Introduced Animals

Despite their relative isolation, introduced animals have taken a toll on some of the island ecosystems. Probably more than with introduced plants, management intervention has the potential to deal with this issue and achieve long-term protection, if care is taken to avoid further introductions of exotic species. Indeed, total eradication is a strong possibility for some species; however, mice and introduced birds are inherently difficult to control. In cooperation with the Northern and Yorke Natural Resources Management (NRM) Board, DEH staff and volunteers have and should continue to take steps to deal with introduced animals as opportunity permits. DEH should also provide information on the adverse impacts of introduced fauna to raise public awareness and generate community support for control programs.

<u>Althorpe Islands Conservation Park</u>

The Domestic Goat (*Capra hircus*) was probably introduced to the main Althorpe Island soon after human occupation and subsequently turned feral. By 1990 all Goats had been exterminated (Lawley and Shepherd, 2005). The grazing pressure of these and other herbivores introduced by various lighthouse keepers (eg wallabies, sheep and horses) significantly impacted the island's native vegetation, and monitoring its recovery following removal of these animals is ongoing (see Section 5.2 Vegetation – Native and Introduced).

Cats (*Felis catus*) were also introduced to Althorpe Island during occupation by lighthouse keepers, which likely had a considerable impact on the island's native fauna. These animals have since been eradicated.

Introduced animals that remain in abundance on Althorpe Island include the Garden Snail (*Helix asper*), House Mouse (*Mus musculus*), House Sparrow (*Passer domesticus*) and Common Starling (*Sturnus vulgaris*). Control of these species is likely to prove difficult.

Introduced animals are not recorded at any of the other islands in the Althorpe group.

Goose Island Conservation Park

At one time the main Goose Island had a large House Mouse population and a population of European Rabbits (*Oryctolagus cuniculus*); the House Mouse population has been significantly reduced through a combination of drought and baiting [61], and the Rabbits have been eradicated. There are also many Feral Pigeons (*Columba livia*) on Goose Island, which have been subject to a culling program implemented by the island's lessee under the direction of DEH and the Northern and Yorke NRM Board (see Section 9.1 Leases and Licences). Cats have been present on Goose Island, and are controlled by the lessee as required. A Fox (*Vulpes vulpes*) was recently sighted on Island Point.

Little Goose Island is home to Common Starlings, House Sparrows and Feral Pigeons, with these birds roosting and breeding in boxthorn bushes and rock crevices (Robinson et al., 1996). The House Mouse is also expected to inhabit this island. Feral Pigeons are known to inhabit the crevices on White Rocks, as they do on the largest and southernmost of the Seal Rocks. Island Point has evidence of a previous European Rabbit infestation, while Rocky Island is another roosting spot favoured by Feral Pigeons.

Troubridge Island Conservation Park

It has been estimated that at times more than 10,000 Common Starlings from the nearby Yorke Peninsula mainland roost at Troubridge Island Conservation Park (Robinson et al., 1996), competing with native species for roosting sites and fouling the keepers' cottages. It has also been suggested that the Marbled Geckos and Sleepy Lizards that occur on the island may be introduced, but as native species common on other islands, their continued presence is appropriate. At one time a domestic cat lived feral on the island, but it has since been eradicated.

Objective

Control, and eradicate where possible, introduced animals within the parks, to reduce impacts on biodiversity.

Strategies

- Undertake further surveys to determine the extent of introduced animal populations, and investigate and encourage research into impacts on native flora and fauna, and on the outcomes of habitat regeneration and revegetation programs.
- Devise and implement control/eradication programs in accordance with conservation priorities, taking into account the benefits versus costs of possible adverse effects on native wildlife and off-target impacts.
- If and when pest animal control work proves necessary, work cooperatively with the Northern and Yorke NRM Board, lessees and other stakeholders, Friends groups and volunteers to achieve effective and sustainable outcomes.
- Cooperate with the Narungga community to instigate pest control in Goose Island Conservation Park.

6 MANAGING FIRE

Fire is a landscape process that is pivotal in shaping Australian ecosystems. It is therefore important that land management in reserves incorporates informed fire management practices where fire is an issue.

Bushfires are not known to have occurred on Althorpe Islands, Goose Island or Troubridge Island Conservation Parks. As none of the islands support vegetation types that would readily carry a fire except under exceptional conditions, it seems unlikely that fire was a major determinant in the development of the island ecosystems. For that reason, burning for ecological or fuel reduction reasons is not envisaged during the term of this management plan. However, fire may be used to assist weed control programs for species such as African Boxthorn (*Lycium ferocissimum*), or for other ecological purposes.

Although the risk of bushfire is considered minimal, care is still required. Campfires are prohibited. All people visiting the islands need to be made aware of the problems that could arise if fires are lit and escape from control and the reasons for prohibitions on campfires.

Of more concern are the buildings on each park that could be damaged or destroyed by structural fires. Fire extinguishers have been placed in all accessible buildings on Althorpe Island, which are maintained on an annual basis. It is the lessees' responsibility on Goose Island and Troubridge Island Conservation Parks to ensure appropriate extinguishers are in place and maintained regularly. Appropriate precautions should be taken to:

- remove flammable growth and materials, and minimise hazards in and around buildings, using methods sympathetic to heritage principles where appropriate;
- have appropriate up-to-date fire-fighting equipment on hand; and
- ensure DEH personnel and others are aware of fire safety requirements and emergency procedures.

Fire management plans will not be required for these parks, but hazard mitigation and fire-readiness should be an integral part of park management. Lessees and volunteers should be involved to ensure that they have a proper understanding of the fire risks, and support the precautions and mitigating actions being proposed or undertaken.

Objective

Manage fire to ensure the protection of life and property, the maintenance of biodiversity and the protection of natural, cultural and built values.

Strategy

- Develop, review and implement fire management practices in association with lessees and other stakeholders to minimise risk to life and property, and to maintain biodiversity.

7 MANAGING CULTURAL HERITAGE

7.1 Aboriginal Heritage

Narungga Culture and Heritage

The Narungga people have traditional associations with Althorpe Islands, Goose Island and Troubridge Island Conservation Parks, as they do with the whole of Yorke Peninsula, from north of Port Broughton and east to the Hummock Ranges to as far down as Stenhouse Bay. Narungga people still have strong physical and spiritual connections to Yorke Peninsula, particularly Wardang Island, and the islands of Yorke Peninsula are an intrinsic part of their 'Dreaming'.

Some traditional knowledge may have been irretrievably lost but more than 1,000 words and phrases of Narungga language were recorded and are being spoken again (Voice of the Land, 2001). Other aspects of traditional culture and 'Dreaming' narratives are being re-established. In this context, it should be noted that for historical or cultural reasons, knowledge of cultural heritage and traditional stories can be privileged to selected people and therefore unable to be recorded.

To date, the full extent of Aboriginal heritage on Althorpe Islands, Goose Island and Troubridge Island Conservation Parks has not been comprehensively researched, although the islands forming Goose Island Conservation Park were regularly visited by Narungga people, who probably walked or swam across from the Point Pearce peninsula (Robinson et al., 1996). Narungga people still regularly visit Goose Island Conservation Park. Given the paucity of existing information, it is important that further research is undertaken to gain a better understanding of the extent of Aboriginal occupancy, use and affiliation with these areas. DEH staff should liaise with representatives of the Narungga community and take appropriate steps to facilitate their involvement with the parks and in implementing this plan of management as caring for country and maintaining links and connectivity is important for the Narungga people.

Aboriginal Heritage Act 1988

The purpose of the *Aboriginal Heritage Act 1988* is the protection and preservation of Aboriginal sites, objects and remains. 'Aboriginal site' and 'Aboriginal object' are defined under the Act as 'an area of land or an object that is of significance according to Aboriginal tradition; or that is of significance to Aboriginal archaeology, anthropology or history'. The Aboriginal Affairs and Reconciliation Division (AARD) of the Department of the Premier and Cabinet maintains a Central Archive, including the Register of Aboriginal Sites and Objects.

Although there are no sites listed on the Central Archive for Althorpe Islands, Goose Island or Troubridge Island Conservation Parks, comprehensive surveys of the parks are yet to be undertaken. In carrying out the activities and strategies proposed in this plan, DEH will ensure that it complies with the *Aboriginal Heritage Act 1988*.

To ensure the protection of sites, DEH staff will consult with AARD and the relevant regional Aboriginal heritage committees before commencement of any significant development works.

Objective

Ensure that any Aboriginal sites, objects and remains are protected and preserved.

Strategies

- Maintain liaison with representatives of the traditional Aboriginal custodians who have an interest in the parks, to facilitate their participation in park management.
- Consult with relevant authorities, traditional owners and relevant regional Aboriginal heritage committees in decisions regarding the management of Aboriginal heritage.
- Identify and protect any Aboriginal sites, objects and remains in cooperation with traditional owners, relevant regional Aboriginal heritage committees, AARD and other relevant authorities.

7.2 Non-Aboriginal Heritage

Heritage Places Act 1993

The *Heritage Places Act 1993* provides a legal framework within which places and objects of State heritage significance, relating in the main to non-Aboriginal history and settlement, may be identified and conserved. The Act protects places of aesthetic, historic, architectural, scientific or social significance by enabling their entry in the South Australian Heritage Register. Objects that are intrinsically related to the significance of a listed State Heritage Place can also be protected, including objects that are not located at the place or have a different owner. The Act also provides for an independent South Australian Heritage Council, which administers the SA Heritage Register, including the entry and removal of State Heritage Places.

Althorpe Islands Conservation Park

In 1802 Matthew Flinders named the Althorpe Isles after the Spencer family home in Northamptonshire (actually spelled 'Althorp'), in recognition of Earl Spencer's patronage. Within a few years sealers visited the islands, the earliest record dated 1815 (Radford, 2005).

Construction of the lightstation on Althorpe Island began in 1877. The lighthouse and three keepers' cottages were constructed with local stone, which was quarried on the island (Radford, 2005).

Three items of historic significance are listed on the State Heritage Register: the lighthouse (Register No. 10312); lighthouse keepers' cottages (Register No. 10314); and jetty and railway for trolley (Register No. 10318). The Register of the National Estate also lists the lighthouse and keepers' cottages (Register No. 6887).

The Althorpe Island lighthouse is still functional; it and the lead light are owned and maintained by AMSA (see Section 9.1 Leases and Licences and Section 9.2 Public Utilities).

The three keepers' cottages on Althorpe Island show a typically South Australian design unlike many lighthouse complexes elsewhere, where there is a hierarchy of living conditions based on rank (Radford, 2005). Since their formation in 1996 the Friends of Althorpe Islands Conservation Park have been involved with conducting maintenance work to the cottages and outbuildings, some of which are utilised by people when on the island. However, despite this maintenance, all buildings have been affected by the marine climate and in some cases are becoming degraded (see Section 8.2 Visitor Activities and Facilities). If funding becomes available, the Conservation Management Plan prepared by Australian Construction Services (1991) should be reviewed.

The jetty was constructed on Althorpe Island's only beach in Mooring Bay, and comprises a railway and trolley, which, along with a ladder, were used to transport goods to and from the island's plateau 93 metres above sea level. In 1904 the ladder, railway and trolley were replaced by a flying fox system (Australian Construction Services, 1991). Today, the jetty is in poor condition and is unsafe for landing; it has not been used by DEH staff, volunteers or researchers for some time (see Section 8.1 Visitor Access).

Six shipwrecks are found in the waters surrounding Althorpe Islands Conservation Park, all of which occurred during or after construction of the lightstation on Althorpe Island, between 1878 and 1982 (Arnott, 1996), including the *SS Pareora*, considered one of the worst disasters in Investigator Strait, killing 11 of the 18 crew (Radford, 2005). Although beyond park boundaries, shipwrecks are subject to legal protection under both the State (1981) and Federal (1976) *Historic Shipwrecks Acts*. There are four graves and/or memorials located along the northern face of Althorpe Island, some of which are of people killed in the shipwrecks that occurred adjacent the island. The graves and memorials vary in their condition; all were upgraded and maintained by light-house staff, caretakers and the Friends of Althorpe Islands Conservation Park. Future management of the graves should be undertaken in sympathy with their local historic values.

Goose Island Conservation Park

Little is known about the post-European settlement activity on the islands within Goose Island Conservation Park. There are no sites or objects of historic interest identified to date.

Troubridge Island Conservation Park

Between 1838 and 1851 the shallow, sandy shoal in the waters around what is now Troubridge Island Conservation Park caused the wreckage of four ships: the *Dart*, *Parsee*, *Sultana* and *Marion;* the wreck of the *Portonian*, wrecked in 1924, lies within the park boundary. Although all but the wreck of the *Portonian* are beyond park boundaries, shipwrecks are subject to legal protection under both the State (1981) and Federal (1976) *Historic Shipwrecks Acts*. Following the wreck of the *Marion*, the Australian Chamber of Commerce ordered that Matthew Flinders' charts of the waters be re-examined for accuracy. The charts were determined to be precise in defining the extent of the shoal, but construction of a lighthouse was recommended in view of the shipping hazard it posed (Department of Environment and Natural Resources, 1995).

Commissioned in 1856, the Troubridge Island lighthouse is the second oldest in South Australia. The cast iron lighthouse and two keepers' cottages are significant in South Australia as they are prefabricated structures, of which there are few remaining. The State Heritage Register recognises the historic significance of the Troubridge Island lighthouse (Register No. 10184) and keepers' cottages (Register No. 10183). The Register of the National Estate also lists the lighthouse (Register No. 102723) and keepers' cottages (Register No. 6870).

The Troubridge Island lighthouse was automated in 1981 and was extinguished in 2002. Some corrosion has occurred around the webs at the base of the lighthouse. Preventative measures have been undertaken by DEH and the commercial tourism operator in a bid to reduce the amount of erosion around the base of the lighthouse and cottages. However, the long-term use and ongoing maintenance of the lighthouse needs to be resolved by its owner, the Department for Transport, Energy and Infrastructure.

The keepers' cottages are timber framed buildings, examples of 1850s architecture and are currently utilised as short-term holiday accommodation through a commercial tourism operation (see Section 8.3 Commercial Tourism). However, unlike the lighthouse, which was apparently constructed on the underlying bedrock, the cottages are constructed on pylons and have had the island's shifting sands move around them, and have been at the mercy of the sea for more than 150 years. Such exposure has considerably impacted the cottages despite maintenance efforts, are showing signs of structural damage (see Section 8.2 Visitor Activities and Facilities). If funding becomes available, a Conservation Management Plan for the heritage-listed infrastructure should be prepared to ensure its appropriate conservation.

In 1838 a member of a wrecked ship reported sighting a sealing camp on Troubridge Island, however few details are known (Robinson et al., 1996).

Objective

Ensure significant non-Aboriginal heritage sites within the parks are conserved and protected.

Strategies

- In cooperation with relevant authorities, protect sites of historical significance located in the parks.
- Monitor structural damage to the heritage-listed cottages on Althorpe Islands and Troubridge Island Conservation Parks.
- In cooperation with relevant authorities and other knowledgeable sources, encourage research into historic sites and stories that relate to the parks, and record these to the appropriate standard.
- Liaise with the Department for Transport, Energy and Infrastructure to ensure DEH is advised of the decision made regarding the long-term use and maintenance of the lighthouse on Troubridge Island Conservation Park.
- Develop, implement and review conservation management plans for heritage-listed infrastructure if feasible.

8 MANAGING TOURISM AND RECREATION

Althorpe Islands, Goose Island and Troubridge Island Conservation Parks all contain remnant native vegetation and habitat for native wildlife that contributes to the region's biodiversity and Althorpe Islands and Troubridge Island Conservation Parks contain sites of heritage significance. Since the parks were established to conserve these natural and cultural values, their protection is the primary objective of management. Visitor use and access must be compatible with this objective to ensure the natural and cultural values of the parks are adequately protected. Visitor use at Althorpe Islands, Goose Island and Troubridge Island Conservation Parks is relatively low, being restricted by their geographic locations, lease agreements and prohibited area status.

8.1 Visitor Access

Althorpe Islands Conservation Park

Visitor use at Althorpe Islands Conservation Park is mostly restricted to the main Althorpe Island and is mainly comprised of DEH staff, Friends group members and volunteers undertaking management and conservation works, researchers and occasionally visitors accessing the island by boat. Since the automated lighthouse on the island is still functional, personnel from the Australian Maritime Safety Authority (AMSA) also visit the island (via helicopter) to undertake lighthouse maintenance. Hitherto, some casual visitors have accessed the island by yachts, boats or kayaks, and may have climbed to the plateau to explore the island. Authorised visitor numbers are unlikely to exceed 250 people per year.

Althorpe, Haystack and Seal Islands to low water mark were declared a Prohibited Area under the *National Parks and Wildlife Act 1972* in 2007, and access is managed by permit.

As discussed in 5.3 Native Fauna, the White-bellied Sea-Eagle (*Haliaeetus leucogaster*; SA:E; YP:V) nests on Althorpe and Haystack Islands and during nesting this species is particularly sensitive to disturbance and is known to abandon its nest, and cease its breeding effort if disturbed. Access throughout the breeding season (June to December) should be controlled to minimise disturbance to sea-bird breeding on the island.

In the past, boat access could be made to the island via the jetty, and the zigzag walking trail provided access to the plateau, with the flying fox used to transport goods. However, considerable deterioration of the jetty and walking trail has resulted in the closure of these structures, currently restricting access to the island via helicopter only. Signs have been erected on the jetty and walking trail to clearly identify them as unsafe and closed.

Risk assessments of the jetty have been undertaken in recent years (Terry Magryn & Associates Pty Ltd, 2004; Ports Corp SA, 1999), which have identified the jetty as being unsafe for landing, with many piles deteriorating or missing, handrails missing, and decking uneven and unsafe. While the flying fox itself is in reasonable condition (due to the maintenance conducted by the Friends group), the timber structures on the flying fox platform have deteriorated such that they have no structural integrity, and the anchor point of the flying fox places undue strain on the deteriorated jetty structure. The most recent risk assessment found that the jetty required complete demolition and rebuilding before it could be considered safe to use. Such an undertaking would be extremely costly and, given the park's primary conservation focus, limited visitor use and low priority for statewide infrastructure investment, is not considered a feasible option.

The heritage status of the jetty is recognised, as is the need to protect and conserve heritage-listed items. However, maintaining the jetty in its current condition would not only require considerable ongoing investment but would also maintain the public risk issue as visitors may still access the jetty despite the warning and closure signs on the structure. Ignoring the deteriorated state of the jetty is not an option, as the structure would continue to deteriorate, creating further public risk to visitors who unlawfully utilised the jetty, and contributing to marine debris and navigational hazards as the jetty fell apart. Hence, it is the recommendation of this management plan that DEH will investigate opportunities for partial or total removal of the heritage-listed jetty at Althorpe Island to address public safety and maintenance issues in conjunction with the DEH Heritage Branch. Significant infrastructure associated with the jetty should be retained for its local historic value at an appropriate location. Opportunities for external parties (eg the Australian Defence Force) to be involved with dismantling of the jetty should be investigated.

As with the jetty, risk assessments of the very narrow and steep zigzag walking trail have determined it to be currently unsafe for use because:

- it is unstable with unsafe posts and support wires and ropes;
- numerous retainer walls have collapsed;
- it has irregular, unsafe steps; and
- it traverses sections beneath eroding sandstone cliffs that are subject to rockfalls.

The most recent assessment of the zigzag walking trail was in November 2006 when a builder's assessment and proposal to reroute the trail was undertaken.

The condition of the jetty and closure of the walking trail has limited visitor access to Althorpe Island. Helicopter access has been utilised for some time by DEH staff and Friends group members and, until a decision is made on future options for the walking trail, will provide for the continued implementation of management programs to maintain the biodiversity gains made over the last few years.

In the longer term, the most desirable form of access to Althorpe Island is via boat and use of a walking trail. Although removal of the jetty is recommended in this management plan, beach landings could be made by small boats in the right sea conditions. Access to the plateau could be achieved by upgrading the existing walking trail or rerouting it to a less steep and challenging path. If funding becomes available in the future, boat access to Althorpe Island should be reinstated and the existing walking trail should be upgraded or rerouted, following comprehensive assessments and the development of a detailed access plan that addresses initial and ongoing costs, biodiversity conservation and heritage values.

The airstrip on the main Althorpe Island has not been used for some time. It is outside of controlled air space and is not a certified airstrip. As such, it is the responsibility of the owner (DEH) and can be managed as the owner desires. Given the high biodiversity values of the island, the large number of Short-tailed Shearwater nests along the airstrip, the rehabilitating native vegetation along the airstrip and the lack of use of the island for the majority of the year, there are no plans to bring the airstrip back into operation. The airstrip will be formally closed.

Goose Island Conservation Park

Visitors to Goose Island Conservation Park are thought to comprise no more than a few hundred people per year, mainly during summer. Access to Goose Island can be made via boat landings on a sandy beach on the north-eastern side of the island (see Figure 1).

Being relatively low-lying, it is presumed that the various other islands within Goose Island Conservation Park are occasionally visited and explored by locals and people holidaying in the area.

General public access can be arranged with DEH regional staff, however it should be noted that Scotch College is the current lessee of the rudimentary hut they constructed on the island, which provides a kitchen, eating/recreation area and storeroom (see Section 9.1 Leases and Licences).

The existing lease expires in 2027, at which time a process of determining future arrangements will be undertaken by DEH.

Troubridge Island Conservation Park

Troubridge Island to Low Water Mark is a Prohibited Area under section 42 of the *National Parks and Wildlife Act 1972*. Public access is permitted under controlled conditions, implemented through an existing lease agreement that permits the lessee to accommodate paying guests in the keepers' cottages (see Section 8.3 Commercial Tourism). Scientific researchers also visit the island to study and monitor the sea-bird populations. Permission can be granted by DEH regional staff for the general public to visit the park.

The lessee of Troubridge Island Conservation Park has provided estimated numbers between 350-400 paying customers to the cottages each year depending on weather conditions and water supply on the island. It was also reported that during summer 60-70 unauthorised visitors from boats and yachts land on the island. These unauthorised people and their activities (eg camping, fires, dogs, traversing across nest sites) are a potential threat to nesting sea-birds and some have been reported to break into the lighthouse, in doing so threatening the heritage value of this structure and, given its

poor condition, risking their own safety. Unauthorised visitors also decrease the quality of experience for people staying on the island as part of the commercial tourism operation by wandering around the cottages and seeking to use the facilities. The existence of a commercial tourism operation on the island is beneficial as the presence of the lessee can assist in minimising unauthorised access and managing impacts of authorised visitors through increased environmental awareness and education. To further minimise unauthorised access, it is the recommendation of this management plan that signage be improved at the Edithburgh jetty and at the Edithburgh boat ramp to raise awareness of the conservation issues and the restrictions placed on accessing Troubridge Island Conservation Park.

Objective

Provide access to the parks in a manner that minimises public risk, does not impact on the natural or cultural values, and is consistent with any existing lease arrangements.

Strategies

- Permit controlled access to the main Althorpe Island at Althorpe Islands Conservation Park.
- Investigate opportunities for partial or total removal of the heritage-listed jetty on the main Althorpe Island at Althorpe Islands Conservation Park to address public safety and maintenance issues.
- Facilitate controlled boat access (via beach landings) to the main Althorpe Island at Althorpe Islands Conservation Park if funding becomes available to upgrade the existing walking trail or reroute it to a less steep and challenging path.
- Formally close the rehabilitating airstrip on the main Althorpe Island at Althorpe Islands Conservation Park.
- Raise awareness of the conservation issues and access restrictions at Troubridge Island Conservation Park through liaison with yachting and boating clubs, and improved signage at the Edithburgh jetty, at the boat ramp, and on the island itself.

8.2 Visitor Activities and Facilities

Priority should be given to outdoor recreation that promotes understanding and enjoyment of the natural, cultural and historic environment, and visitors should be encouraged to use the parks with this in mind. Given the casual nature of the recreational activities undertaken by the current visitors, minimal facilities are required. The relatively few people who do visit the islands are fairly self-sufficient and there is no requirement for the development of built facilities beyond those already provided. Campfires and dogs are not permitted at any of the parks included in this management plan. Camping is only permitted to be undertaken by the lessees of the main Goose Island at Goose Island Conservation Park.

<u>Althorpe Islands Conservation Park</u>

As mentioned in Section 8.1 Visitor Access, visitor use on the main Althorpe Island mainly comprises DEH staff, Friends group members, volunteers, researchers and occasional visitors. Activities undertaken on the island are mostly the implementation of management and conservation programs, much of which is undertaken by the Friends of Althorpe Islands Conservation Park. Other activities likely to occur include walking, recreational fishing, kayaking, diving and nature appreciation.

A small amount of recreational fishing is undertaken in the intertidal waters of the main Althorpe Island by volunteers and researchers. Recreational fishing in the intertidal waters of Althorpe Islands Conservation Park by authorised visitors is permitted by a notice issued by the Director of National Parks and Wildlife, subject to any future marine park management arrangement. While visitors can undertake this activity in the intertidal waters, DEH does not support accessing these waters via the closed zigzag path (the only formal track between the shore and the island plateau), because of the public safety risks. It should be noted that controls apply on fishers under the *Fisheries Management Act 2007* that must be complied with.

Until recently the three keepers' cottages were available for accommodation by people undertaking approved DEH programs. Risk assessments of the three keepers' cottages have identified that they all contain asbestos (some of which is damaged), and the electrical wiring within the buildings does not meet appropriate building standards. A recent storm caused the roof from

Cottage Two (see Figure 2) to blow off; this was subsequently replaced, though not to appropriate building standards. In response to this incident preventative maintenance was undertaken to better secure the roofs of Cottage One and Cottage Three, and options for stabilisation of the Cottage Two roof were identified by a licensed builder in November 2006.

The low level of occupancy at any one time at Althorpe Island is such that only one cottage is required for accommodation. Furthermore, the amount of work required to upgrade and maintain all three cottages to appropriate standards is beyond the resources currently available. Hence, it is the recommendation of this management plan that one cottage (Cottage One) be upgraded, maintained and used for accommodation, and the other cottages (Cottages Two and Three) become sealed structures, into which access is prohibited. Sealing the cottages would entail boarding up the doors and windows, disconnecting electrical wiring and removing any extraneous material that may be prone to storm damage. The heritage significance of these cottages is recognised and, as such, the sealing of these structures will be undertaken in sympathy with heritage principles and in a manner that minimises visual and structural impacts. Volunteers will be permitted to undertake external maintenance of the cottages subject to DEH approval.

Goose Island Conservation Park

The Scotch College staff and students that utilise the main Goose Island undertake activities such as camping, sailing, snorkelling, kayaking, visiting the area's shipwrecks, and nature observation and education. A rudimentary hut on Goose Island provides the school with basic kitchen facilities, a storeroom, and an eating and recreation area. Composting toilets have also been installed. Unless approved by DEH, no other facilities are provided and none will be developed. An ad-hoc network of walking trails radiates from the hut (see Figure 3), which should be rationalised to minimise impacts on soils and vegetation, perhaps in conjunction with the lessees.

Part of Goose Island Conservation Park (including the main Goose Island) is enclosed by Goose Island Aquatic Reserve, proclaimed under the *Fisheries Management Act 2007*. Since Goose Island Conservation Park is proclaimed to low water mark, there is an area of overlap over the intertidal zone between the park and the aquatic reserve (see Figure 3). Goose Island Aquatic Reserve is a marine protected area that was established to conserve the marine environment and provide a site where teaching institutions could conduct classes and scientific research on marine biology and ecology. It was also set aside to protect the habitat of the Australian Sea-lion (*Neophoca cinerea*) colony on White Rocks. Activities permitted within Goose Island Aquatic Reserve include scientific research, education, boating, diving and swimming; all forms of fishing and the collection or removal of marine organisms are prohibited (PIRSA, 2007). Swimming and diving are permitted in the intertidal waters of Goose Island Conservation Park.

The prohibition of all fishing activities on the islands within Goose Island Aquatic Reserve must be adhered to. The intertidal waters of Goose Island Conservation Park (excluding those islands within Goose Island Aquatic Reserve) permit recreational fishing, subject to existing and future regulation and any future marine park management arrangements. Recreational fishing in the intertidal waters of the other islands within the park is not currently a concern to park managers so long as the controls applied on fishers under the *Fisheries Management Act 2007* are complied with.

Troubridge Island Conservation Park

The visitors that access and stay at Troubridge Island Conservation Park, as permitted by DEH or through the existing lease agreement, undertake low-key recreational activities that are compatible with protecting and conserving the island's significant sea-bird populations. Such activities include swimming, snorkelling, bird watching, nature appreciation and general relaxation. The intertidal waters around Troubridge Island permit swimming, diving and recreational fishing by authorised visitors to the park only. It should be noted that recreational fishing is subject to existing and future regulation and any future marine park management arrangement.

There are a number of informal walking trails on the island and the surrounding beach that can generally be used, although recreation activities should not be undertaken on the western and southern part of the island near the sea-bird rookeries, particularly during the breeding season. Until recently, the elevated boardwalk, which was constructed to minimise human-induced erosion through disturbance to vegetation, provided a viewing platform for the island and its sea-bird rookeries. However, the viewing platform was removed and the boardwalk reduced in length to address public safety issues.

Concerns have been raised in the past regarding illegal commercial fishing activities within the park boundary, particularly given these waters are important feeding habitat for Little Penguins (*Eudyptula minor*) and other sea-birds. Liaison with PIRSA Fisheries was undertaken as an initial step, and with its active participation, seems to have resolved the issue; this liaison should be maintained. Furthermore, it is recommended that better signage be installed at Edithburgh jetty.

One of the former keepers' cottages (Cottage One) on Troubridge Island Conservation Park provides accommodation for those visitors that stay as customers of the commercial tourism lessee. The second keepers' cottage (Cottage Two) is used for storage by the lessee or occasionally accommodation for DEH staff or volunteers. Numerous outbuildings have been removed due to undermining by the ocean. As the cottages are constructed on pylons the extreme coastal environment has only caused minimal deterioration, which has enabled the cottages to be retained for 150 years. Cottage Two has had one chimney removed to mantle height as it was pulling away from the main cottage. Erosion around the cottages has been further exacerbated by the burrowing behaviour of the island's Little Penguin (*Eudyptula minor*) population (see Section 5.1 Geology, Soils and Landform, and Section 5.3 Native Fauna). Although preventative measures have been implemented in a bid to reduce the amount of erosion around the cottages, the rising sea levels and increased storm surges that are predicted to occur as climate change progresses (see IPCC 2007a, 2007b, 2007c) are likely to negate these preventative measures.

DEH has reviewed numerous options to manage the infrastructure on Troubridge Island Conservation Park (excluding the lighthouse, which is the responsibility of the Department for Transport, Energy and Infrastructure; see Section 7.2 Non-Indigenous Heritage). Given the park's low priority for statewide infrastructure investment, DEH does not have the resources to invest in the upgrade and maintenance of the keepers' cottages, which, in the absence of a commercial tourism operation, are unlikely to be utilised. Investing considerable ongoing resources into vacant buildings on the island would be uneconomical, particularly given the longer term likelihood of the cottages being lost to the sea through the natural shifting of the island's sands, which will be exacerbated by the impacts of climate change. Without investment to upgrade and maintain the buildings they would further deteriorate and gradually be lost to the ocean, all the while risking public safety, creating navigational hazards and marine debris. Furthermore, vacant, deteriorating infrastructure on the island would be an invitation for unauthorised visitors to 'help themselves', exacerbating safety risks and generally promoting poor management. Hence, in the absence of a lease arrangement and an alternative long term strategy for maintenance, this management plan recommends that the keepers' cottages and associated infrastructure may have to be removed from Troubridge Island Conservation Park, and the island be managed solely for biodiversity conservation. Prior to this occurring, comprehensive research and assessments would be undertaken to carefully consider all management options and obtain the necessary approvals.

As mentioned in Section 8.1 Visitor Access, it is recognised that the presence of a commercial tourism operator on the island is beneficial to biodiversity conservation. The lessee's presence can provide the park with a level of protection beyond that which DEH can provide, thus minimising unauthorised visitor access and ensuring those visitors with authorised access conduct themselves in a manner conducive to the protection and conservation of the natural environment. It is further recognised that, as a holiday destination, Troubridge Island Conservation Park is popular for state, interstate and overseas visitors. As such, it is preferential that, as long as is practical and appropriate with respect to environmental parameters, the keepers' cottages on Troubridge Island Conservation Park continue to be utilised through a lease agreement. Any future lease agreement at Troubridge Island Conservation Park will address responsibility for the upgrade and maintenance of the buildings (including capital maintenance). Section 8.3 Commercial Tourism further discusses future lease agreements at Troubridge Island Conservation Park.

Objective

Provide opportunities for visitors to utilise the parks in a way that does not compromise the natural or cultural values.

Strategies

- At Althorpe Islands Conservation Park, upgrade and maintain Cottage One at a standard appropriate to accommodate DEH staff, volunteers and researchers; seal Cottage Two and Cottage Three in sympathy with heritage principles; and prohibit access.

- At Goose Island Conservation Park, liaise with Scotch College to rationalise the ad-hoc trail network on Goose Island.
- Improve signage at Edithburgh jetty and boat ramp and, if necessary, at locations around the boundary of the island at Troubridge Island Conservation Park to identify the park as a Prohibited Area.
- For so long as is practical and appropriate, permit the utilisation of the keepers' cottages at Troubridge Island Conservation Park as holiday accommodation through a commercial tourism operation lease that is consistent with the principles outlined in this plan.
- In collaboration with the lessee, monitor the impacts of environmental change on the keepers' cottages and associated infrastructure on Troubridge Island Conservation Park to determine if and when remedial work are required.
- In the absence of a lease arrangement and an alternative long term strategy for maintenance, remove the keepers' cottages and associated infrastructure from Troubridge Island Conservation Park, having thoroughly considered and assessed management options and obtained necessary approvals.
- Permit visitors to undertake recreational fishing activities in the intertidal waters of Althorpe Islands, Troubridge Island and Goose Island Conservation Parks (excluding those islands within Goose Island Aquatic Reserve) in a manner that is consistent with any access restrictions, provisions of the *Fisheries Management Act 2007* and future regulations imposed, and liaise with PIRSA Fisheries and other fishing interests regarding fisheries management within the parks' boundaries.
- Permit visitors to undertake swimming activities at Goose Island and Troubridge Island Conservation Parks in a manner that is consistent with any access restrictions.
- Develop mechanisms to enable the lessees at Goose Island and Troubridge Island Conservation Parks to report details of offences committed under the *National Parks and Wildlife Act 1972* to DEH.
- Liaise with the lessee at Troubridge Island Conservation Park to ensure visitors remain on paths and beaches to avoid traversing through sea-bird habitat at all times.

8.3 Commercial Tourism

Troubridge Island Conservation Park

Under the existing lease for Troubridge Island Conservation Park, the former keepers' cottages are utilised as short-term holiday accommodation, and it is mainly through this arrangement that visitors access the park.

As discussed in Section 8.2 Visitor Activities and Facilities, the keepers' cottages at Troubridge Island Conservation Park are vulnerable to the incursion of the sea and have deteriorated since their construction 150 years ago. Erosion around the cottages has been further exacerbated by the burrowing behaviour of the island's significant Little Penguin (*Eudyptula minor*) population (see Section 5.1 Geology, Soils and Landform, and Section 5.3 Native Fauna). As time progresses, the natural shifting of the island, exacerbated by the impacts of climate change, is likely to negate any preventative measures implemented to reduce erosion around the cottages.

It is recognised that the presence of a commercial tourism operator at Troubridge Island Conservation Park is beneficial to biodiversity and heritage conservation by providing the park with an extra level of protection. It is further recognised that, as a holiday destination, Troubridge Island Conservation Park is popular for state, interstate and overseas visitors. Hence, it is preferential that a commercial tourism operation lease continues to exist at Troubridge Island Conservation Park. Any future lease agreement granted at Troubridge Island Conservation Park will be purpose-written to address environmental, heritage and maintenance responsibilities. The following conditions should form part of such a lease at Troubridge Island Conservation Park:

- Troubridge Island Conservation Park will only be available for the operation of a commercial tourism lease or any other form of lease until such time as DEH deems it environmentally unsafe (that is, until the impacts of natural erosion and/or climate change result in the infrastructure being too unstable or damaged for occupation);

- the lessee will acknowledge the environmental pressures that Troubridge Island Conservation Park is exposed to and that at any time the island may succumb to those pressures, thus resulting in the termination of a lease agreement.

Until expiration of the existing commercial tourism lease, DEH will continue to abide by the obligations for management of the Troubridge Island infrastructure as outlined in the lease agreement. Any new lease agreements should encourage cooperation between the lessee and DEH-supported researchers in order to facilitate research activities that promote and conserve the natural and cultural values of the park.

Althorpe Islands and Goose Island Conservation Parks

There are currently no commercial tourism operations at Althorpe Islands or Goose Island Conservation Parks, and none are envisaged to be established during the life of this management plan. However, should any commercial tourism operations be established at either park, the operators will be required to obtain the mandatory Commercial Licence pursuant to regulation 37 of the *National Parks and Wildlife (National Parks) Regulations 2001* and to conduct their operations in a manner consistent with the objectives of this management plan. Any commercial tourism licence or lease would also be subject to any future marine park management arrangements.

Charter operators currently conduct tours to view the marine mammal populations at Althorpe Islands Conservation Park without accessing the islands or entering park boundaries. DEH will continue to liaise with commercial operators regarding this activity and to monitor the impacts on the islands' populations.

Objective

Encourage commercial tourism that is consistent with, and promotes, the protection and conservation of the natural and cultural heritage values of the parks.

Strategies

- At Troubridge Island Conservation Park, maintain liaison with the existing commercial tourism lessee to ensure compliance with conditions and the objectives of this management plan.
- At Troubridge Island Conservation Park, consider permitting future commercial tourism operations or other lease arrangements for as long as is practical and appropriate, and ensure the lease conditions are consistent with the objectives of this management plan.
- Work in collaboration with the lessees to protect historical, cultural and natural assets, manage pest plants and abate other environmental threats as conditional.
- Consider any requests to undertake commercial tourism ventures on Althorpe Islands and Goose Island Conservation Parks against the objectives of this management plan and, if appropriate, issue leases or licences with appropriate terms and conditions.
- Continue to liaise with charter operators conducting tours around Althorpe Islands Conservation Park to ensure this activity does not impact the marine mammals being observed.

9 MANAGING RESERVE TENURE

Management of the landscape is an essential component of managing DEH reserves. The boundaries of a park should ensure effective biodiversity management and conservation of the values for which the park was dedicated.

Additional land should be acquired when available if it significantly improves the protection of natural and cultural values within a park or regional context, or if it permits more efficient and effective management of the park's values or visitor access and use.

Green Island is located approximately one kilometre west of Point Pearce, in the vicinity of Goose Island Conservation Park (see Figure 1). Green Island is currently unallotted Crown land, and should be added to Goose Island Conservation Park.

Objective

Achieve maximum biodiversity conservation and optimal reserve boundaries for management purposes.

Strategies

- Add Green Island to Goose Island Conservation Park.
- Manage all additions to the parks according to the principles outlined in this management plan.

9.1 Leases and Licences

Althorpe Islands Conservation Park

The main Althorpe Island is subject to a lease agreement with the Australian Maritime Safety Authority (AMSA), which owns and operates the marine aids to navigation on the island, being a lighthouse and lead light. AMSA has leased the land upon which the aids to navigation are situated and associated helicopter pads for a 99-year period, expiring 2092. The arrangement surrounding maintenance of the marine aids to navigation is further discussed in section 9.2 Public Utilities.

Goose Island Conservation Park

The main Goose Island is used by Scotch College as part of its outdoor education program, mainly during the period from November to February. Students learn marine skills by sailing, snorkelling and kayaking, as well as nature appreciation. Scotch College built a rudimentary hut on the island, which provides a kitchen, eating/recreation area and storeroom; tents are used for accommodation (see Section 8.2 Visitor Activities and Facilities).

The existing lease provides Scotch College with exclusive use of the hut constructed on Goose Island, but does not provide Scotch College exclusive use of the Island in its entirety. DEH staff and any person with written approval from DEH may access the island.

Some obligations are imposed on the lessee, including the requirement to maintain the island environment, maintain and bird-proof the building, not undertake extensions, renovations or further developments without DEH approval, implement a pigeon culling program (see Section 5.4 Introduced Animals), and undertake an African Boxthorn control and native revegetation program (see Section 5.2 Vegetation – Native and Introduced). DEH staff should continue to liaise with representatives of Scotch College to ensure compliance with lease conditions.

The existing lease expires in 2027, at which time DEH will determine future arrangements.

Troubridge Island Conservation Park

Troubridge Island Conservation Park is subject to two lease agreements. The first is a commercial tourism operation that provides the island's cottages as short-term holiday accommodation. This lease agreement is discussed in Section 8.3 Commercial Tourism.

The second lease agreement surrounds the lighthouse. In 1993 the (then) Minister of Environment and Natural Resources signed a 99-year lease (expiring 2092) with AMSA over the portion of land on which the lighthouse is situated (AMSA owned and operated the lighthouse). In 2003, following extinguishment of the lighthouse the previous year, AMSA transferred ownership of the lighthouse

to (then) Transport SA, which became bound to the existing lease agreement that AMSA had with the (then) Minister of Environment and Natural Resources for the land.

The lease agreement for the land surrounding the lighthouse identifies that the lessee shall, at its own expense, keep and maintain the marine aid to navigation in good order and repair, and in a safe condition to the reasonable satisfaction of the lessor. While it is recognised that the lighthouse is not operational, the condition of this heritage-listed structure is rather deteriorated; the webs at the base of the lighthouse are corroding, the paint is fading and peeling, and the railing around the top of the lighthouse is loose and unsafe. The door to access the internal staircase is locked, although there have been reports of entry by persons who have accessed the island without an appropriate permit. Such unauthorised entry poses considerable safety risks.

Although the lighthouse is constructed on the underlying bedrock, the rough, high seas during winter have exacerbated erosion around the base of the lighthouse and have contributed to the corrosion of the webs. To date, DEH, the commercial tourism operator, the Friends of Troubridge Island Conservation Park and Conservation Volunteers Australia volunteers have conducted the works conducted to minimise this erosion. Discussions continue with the Department for Transport, Energy and Infrastructure to determine the long-term use and maintenance of the lighthouse, and to ensure compliance with the lease agreement and the direction of this management plan.

Objective

Ensure the parks' lease agreements are operated to the mutual benefit of lessees and DEH, and do not negatively impact on the natural, cultural and historic values of the parks.

Strategies

- Regularly inspect leased areas to monitor compliance with lease conditions, ensuring the various leased premises are operated consistent with those conditions and with protecting park values and broader community interests.
- Work collaboratively with lessees to protect cultural and natural assets, manage pest plants and abate other environmental threats.

9.2 Public Utilities

Marine Navigation Aids

The Australian Maritime Safety Authority (AMSA) owns and operates the marine aids to navigation on the main island at Althorpe Islands Conservation Park, being a main light and a front lead light. AMSA holds 99-year leases over the land surrounding these structures, which expire in 2092 (see Section 9.1 Leases and Licences). The current maintenance regime on Althorpe Island involves AMSA maintenance contractors visiting on an annual/biennial basis via helicopter, unless there is a reported outage of the service, in which case they will then visit the site to assess and repair the fault.

AMSA will forward its annual work program for South Australia to DEH for review and comment. DEH can then contact AMSA and advise of any issues that may arise from the scheduled timings (eg potential clashes between the schedule and sea-bird breeding, particularly the White-bellied Sea-Eagle; see Section 5.3 Native Fauna). In the event of an aid to navigation becoming unserviceable, AMSA contractors will be allowed to perform emergency repairs, regardless of season, after endeavouring to contact DEH to receive advice on any current issues that should be taken into account in an attempt to minimise disturbance.

Telecommunications

A solar-powered telecommunications structure owned by Telstra is located on the main Althorpe Island of Althorpe Islands Conservation Park, and is used to power a radio-phone situated in cottage one. The radio-phone is connected as required by the Friends of Althorpe Islands Conservation Park when undertaking conservation or management works on the island. The structure was installed to allow for emergency communication between the island and the mainland, and currently allows Friends Group members, volunteers and researchers access to up-to-date weather conditions via the internet. The advent of mobile phone technology has reduced the need for such equipment, and discussions with Telstra to determine the long-term use and maintenance of the structure on Althorpe Islands Conservation Park are continuing. Key stakeholders, including Friends Group members, volunteers and researchers, will also be involved in exploring sustainable management options for the structure.

A Telstra radio phone tower was installed on Goose Island Conservation Park in 1988. Troubridge Island Conservation Park does not have any public utilities. DEH is opposed to the location of utilities on reserves except under special conditions. Protection of reserve values should be the priority and reserves should not be taken as the 'easy option' for public utility sites because they are public land and (usually) remote from residential areas. Considering their island location, small size and significance for biodiversity conservation, new public utilities should not be installed in the parks unless it can be shown that alternative locations are not available and the utility will not compromise the conservation value of the park. Any future proposal for public utilities within the parks will be subject to an environmental assessment, and must be consistent with DEH policy and the provisions of this management plan.

Objectives

Ensure that maintenance of marine aids to navigation and the telecommunications structure on Althorpe Islands Conservation Park is compatible with the conservation of park values.

Prevent the future installation of public utilities within the parks, except where special circumstances can be proven, to ensure biodiversity values are not compromised.

Strategies

- Liaise with AMSA to ensure maintenance and use of marine aids to navigation on Althorpe Islands Conservation Park minimises impacts on the park's natural values.
- Liaise with Telstra and key stakeholders to determine the long-term use and maintenance of the telecommunications structure on Althorpe Islands Conservation Park.
- Manage and respond to any proposal for the location of public utilities within the parks in accordance with the current DEH policy and the provisions of this management plan.

10 INVOLVING THE COMMUNITY

Friends and Volunteers

Volunteer input has become an integral component of park management throughout South Australia. Community groups (such as Friends, conservation and recreation groups, tertiary institutions, schools and individuals) put in substantial effort on a voluntary basis to the management, development and interpretation of parks. Community involvement creates a sense of ownership, helps conserve and protect biodiversity and cultural assets, and can ensure recreational use is both appropriate and enjoyable.

In the case of Althorpe Islands Conservation Park, DEH particularly acknowledges the volunteer contribution of the Friends of Althorpe Islands Conservation Park. The Friends group has an agreed annual works program that includes building and infrastructure maintenance, weed and feral animal control, and scientific research.

Scotch College, leasing the main Goose Island at Goose Island Conservation Park, has assisted with weed control and the compilation of bird-watching data over many years.

The Friends of Troubridge Island Conservation Park have assisted with weed control (particularly African Boxthorn (*Lycium ferocissimum*)) and undertaken works to help stabilise the island. This Friends group has recently been restructured to encompass other DEH reserves on southern Yorke Peninsula and is now named the Friends of Troubridge Island and Yorke District Conservation Parks.

Other agencies or groups that have been involved in management of these islands are:

- Cadell Training Centre, whose inmates participated in a number of weed control programs on the main island at Althorpe Islands Conservation Park;
- Sporting Shooters Association of Australia, whose members assisted in the feral animal eradication program on the main island at Althorpe Islands Conservation Park; and
- Conservation Volunteers Australia, which has assisted with erosion control works at Troubridge Island Conservation Park.

To retain ongoing commitment, it is important that park managers maintain effective communication with Friends members and other volunteer groups involved in conservation, recreation and the natural sciences.

Regional Communities and Park Neighbours

DEH supports and promotes partnerships and cooperative management arrangements to ensure integrated natural resources management. This requires the development of effective working relationships with government agencies, local authorities, non-government organisations and the local community.

With regard to Althorpe Islands, Goose Island and Troubridge Island Conservation Parks, this involves DEH staff forging and maintaining management links with Primary Industries and Resources SA (PIRSA) Fisheries, Australian Maritime Safety Authority (AMSA), Department for Transport, Energy and Infrastructure (DTEI), South Australian Research and Development Institute (SARDI), District Council of Yorke Peninsula, native title claimants, representative Aboriginal Heritage Committees, The University of Adelaide and key community stakeholders. Park managers should also liaise with the various land management authorities linked to the Northern and Yorke NRM Board, as well as with the park lessees and managers of nearby land.

Objective

Develop and maintain partnerships between state and local government agencies, non-government organisations and the community in the management of the park.

Strategies

- Encourage and support the involvement of Friends and other volunteer groups in park management programs.
- Develop and maintain effective working relationships with government agencies, local authorities, non-government organisations and the local community to ensure integrated natural resource management in the park and region.

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APPENDIX A: PROPERTY DESCRIPTIONS

Conservation Park	Plan*	Parcel^	Hundred	Gazettal Date
Althorpe Islands	S796	H840100	Out of Hundreds (Althorpe Isle)	27/04/1972
	S797	H840100	Out of Hundreds (Althorpe Isle)	27/04/1972
	S70	H844000	Out of Hundreds (Haystack Island)	28/07/1977
	S71	H849000	Out of Hundreds (Haystack Island)	28/07/1977
	DP31579	A1	Out of Hundreds (Kingscote)	9/12/1991
	DP31579	A2	Out of Hundreds (Kingscote)	9/12/1991
	DP31579	A3	Out of Hundreds (Kingscote)	9/12/1991
	DP31579	A4	Out of Hundreds (Kingscote)	9/12/1991
	S13	H840100	Out of Hundreds (Althorpe Isle)	14/08/1997
	S61	H840100	Out of Hundreds (Althorpe Isle)	14/08/1997
Goose Island	S878	H843300	Out of Hundreds (Goose Island)	27/04/1972
	S1037	H851500	Out of Hundreds (Goose Island)	27/04/1972
	S860	H840600	Out of Hundreds (Boat Rock)	29/11/1984
	S914	H844400	Out of Hundreds (Island Point)	29/11/1984
	S916	H848300	Out of Hundreds (Rocky Island (Point Pearce))	29/11/1984
	S1472	H852700	Out of Hundreds (Bikini Islets)	29/11/1984
	S1473	H852700	Out of Hundreds (Bikini Islets)	29/11/1984
	S1474	H852800	Out of Hundreds (Beatrice Rock)	29/11/1984
	S879	H861600	Out of Hundreds (Wardang Island)	29/11/1984
	S1038	H861600	Out of Hundreds (Wardang Island)	29/11/1984
	S1039	H861600	Out of Hundreds (Wardang Island)	29/11/1984
	S1040	H861600	Out of Hundreds (Wardang Island)	29/11/1984
	DP31588	A1	Out of Hundreds (Kingscote)	19/12/1991
	DP31588	A2	Out of Hundreds (Kingscote)	19/12/1991
	DP31588	A4	Out of Hundreds (Kingscote)	19/12/1991
	DP31588	A5	Out of Hundreds (Kingscote)	19/12/1991
	DP31588	A6	Out of Hundreds (Kingscote)	19/12/1991
	DP31588	A7	Out of Hundreds (Kingscote)	19/12/1991
	DP31588	A8	Out of Hundreds (Kingscote)	19/12/1991
	DP31588	A10	Out of Hundreds (Kingscote)	19/12/1991
	DP31588	A11	Out of Hundreds (Kingscote)	19/12/1991
	DP31588	A12	Out of Hundreds (Kingscote)	19/12/1991
Troubridge Island	S1227	H850800	Out of Hundreds (Troubridge Island)	16/12/1982
	S1469	H850800	Out of Hundreds (Troubridge Shoal)	3/04/1986

***** S = Section DP = Deposited Plan

^ H = Hundred A = Allotment

APPENDIX B: CONSERVATION STATUS CODES

Australian Conservation Status Codes

The following codes are based on the current listing of species under Section 179 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

EX **Extinct**: there is no reasonable doubt that the last member of the species has died.

EW **Extinct in the Wild**: known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CE **Critically Endangered**: facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

E **Endangered**: facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

V **Vulnerable**: facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD **Conservation Dependent**: the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Note: Prescribed criteria as defined under the IUCN Red List of Threatened Species.

South Australian Conservation Status Codes

The following codes are based on the current listing of species under Schedules of the *National Parks and Wildlife Act 1972*, as amended in 2008. To align with other States, Territories and the Commonwealth (EPBC Act) listing categories and ratings, the IUCN criteria were used as a basis for determining threatened species status under the *National Parks and Wildlife Act 1972*. For IUCN criteria see:

IUCN (2008) *IUCN Red List Categories*. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland (www.redlist.org).

IUCN (2001) *IUCN Red List Categories and Criteria: Version 3.1*. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, United Kingdom (www.redlist.org).

E **Endangered**: (Schedule 7) in danger of becoming extinct in the wild.

V **Vulnerable**: (Schedule 8) at risk from potential or long term threats which could cause the species to become endangered in the future.

R **Rare**: (Schedule 9) low overall frequency of occurrence (may be locally common with a very restricted distribution or may be scattered sparsely over a wider area). Not currently exposed to significant threats, but warrants monitoring and protective measures to prevent reduction of population sizes.

Regional Status Codes

The categories below apply to the species distribution at a regional level. There are no regional conservation status categories developed for mammals, reptiles or amphibians to date.

Birds

Regional conservation status for birds follow:

Carpenter and Reid (1998) *The Status of Native Birds in the Agricultural Areas of South Australia.* Unpublished and regularly updated database.

The regions are defined as follows:

ML	Mount Lofty	**MN**	Mid-North	**SE**	South-Eastern	**KI**	Kangaroo Island
MM	Murray Mallee	**EP**	Eyre Peninsula	**YP**	Yorke Peninsula		

Plants

Regional conservation ratings for plants follow:

> Lang, PJ & Kraehenbuehl, DN (2001) *Plants of Particular Conservation Significance in South Australia's Agricultural Regions*.
>
> Department for Environment and Heritage (undated) *Florlist*. Unpublished and regularly updated database.

The regions are as defined by the State Herbarium (Plant Biodiversity Centre), illustrated in the front cover of:

> Barker, WR, Barker, RM, Jessop, JP and Vonow, HP (Eds) (2005) *Census of South Australian Vascular Plants. Fifth Edition. J. Adelaide Bot. Gard. Supplement 1.* Botanic Gardens of Adelaide and State Herbarium, Adelaide.

NW	North-Western	**FR**	Flinders Ranges	**NL**	Northern Lofty	**SL**	Southern Lofty
LE	Lake Eyre	**EA**	Eastern	**MU**	Murray	**KI**	Kangaroo Island
NU	Nullarbor	**EP**	Eyre Peninsula	**YP**	Yorke Peninsula	**SE**	South-Eastern
GT	Gairdner-Torrens						

In order of decreasing conservation significance:

X **Extinct/Presumed extinct**: not located despite thorough searching of all known and likely habitats; known to have been eliminated by the loss of localised population(s); or not recorded for more than 50 years from an area where substantial habitat modification has occurred.

E **Endangered**: rare and in danger of becoming extinct in the wild.

T **Threatened**: (*Plants only*) likely to be either Endangered or Vulnerable but insufficient data available for more precise assessment.

V **Vulnerable**: rare and at risk from potential threats or long term threats that could cause the species to become endangered in the future.

K **Uncertain**: likely to be either Threatened or Rare but insufficient data available for a more precise assessment.

R **Rare**: has a low overall frequency of occurrence (may be locally common with a very restricted distribution or may be scattered sparsely over a wider area). Not currently exposed to significant or widespread threats, but warrants monitoring and protective measures to prevent reduction of population sizes.

U **Uncommon**: less common species of interest but not rare enough to warrant special protective measures.

Q **Not yet assessed**: but flagged as being of possible significance.

N **Not of particular significance:** (*Plants only*) also indicated by a blank entry.

C **Common:** (*Birds only*) also indicated by a blank entry.

O **Occasional Visitor Only:** (*Birds only*) not considered of conservational status.