

North East River Game Reserve

North East River
Conservation Area

Management Plan

1999

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Parks and Wildlife Service
Department of Primary Industries,
Water and Environment

North East River Game Reserve Management Plan 1999

This draft management plan for the North East River Game Reserve and North East River Conservation Area has been prepared in accordance with the requirements of part IV of the *National Parks and Wildlife Act 1970*. Unless otherwise specified, this plan adopts the interpretation of terms given in Section 3 of the *National Parks and Wildlife Act 1970*. The term “Minister” when used in the plan means the Minister administering the Act. The term “reserve” refers to the North East River Game Reserve and North East River Conservation Area.

In accordance with Section 23(2) of the *National Parks and Wildlife Act 1970*, the managing authority for the reserve, in this case the Director of National Parks and Wildlife, shall carry out his or her duties in relation to the reserve for the purpose of giving effect to, and in accordance with the provisions of, this management plan. The position of Director is held by the Director, Parks and Wildlife Service, Department of Primary Industries, Water and Environment.

A draft of this plan was released for public comment in accordance with statutory requirements from March 14 1998 until May 1 1998. This plan is a modified version of that draft, having been varied to take account of public input during that period and the views of the National Parks and Wildlife Advisory Council.

APPROVAL

This management plan was approved by His Excellency the Lieutenant-Governor-in-Council on 15 July 1999 and took effect on 17 November 1999, being seven days after publication of that approval in the *Government Gazette*.

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Part A Management Context

Section 1 Introduction

1.1 Plan Area and Tenure

The North East River Game Reserve lies on the north east tip of Flinders Island within the Flinders Council municipal area (see Map 1). The reserve is approximately 25 kilometres by road from Killiekrankie and 55 kilometres by road from Whitemark.

The reserve has a total land area of 2,405 hectares and is bounded on the east by Foochow Beach and the Tasman Sea; on the west by Wingaroo Nature Reserve, private land and a small unallocated Crown land block; on the north by rocky coast; and, on the south by private land and unallocated Crown land (see Map 2). The reserve encloses two blocks of privately owned land and a conservation area. This plan applies to the conservation area but not the private land.

The reserve consists of a large estuarine system formed by the drainage of the North East River, Arthurs Creek and many associated tributaries. The estuary enters the sea between Holloway Point and Foochow Beach.

The land was formally reserved under the *National Parks and Wildlife Act 1970* as a game reserve on 10 September 1991 by Statutory Rules 1991, No 170, and is registered on Plan CPR 2198. The contiguous Wingaroo Nature Reserve was reserved at the same time. The two areas were separately reserved to allow for the continued use of the game reserve for recreational hunting, specifically for duck and pig hunting. The reservations were made on the basis of the diversity of plant communities including endangered healthlands, the valuable wetlands, estuarine marshes and relict *Callitris rhomboidea* scrub-woodland. The type of country included in these two reserves is not currently represented elsewhere in the State's reserve system.

1.2 Game Reserve Purposes and Objectives

Game reserves are a category of reserve under the Tasmanian reserve system.

The purposes of reservation of game reserves are:

- the conservation of the natural values of the area of land that are unique, important or have representative value;
- the conservation of the natural biological or geological diversity of that area of land, or both, and;
- the ecologically sustainable hunting of game species in that area of land.

The management objectives of game reserves are:

- to conserve natural biological diversity;
- to conserve geological diversity;
- to preserve the quality of water and protect catchments;
- to conserve sites or areas of cultural significance;

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- to provide for the taking, on an ecologically sustainable basis, of designated game species for commercial or private purposes, or both;
- to encourage appropriate tourism, recreational use and enjoyment, particularly sustainable recreational hunting;
- to encourage education based on the purposes of reservation and the natural or cultural values of the game reserve, or both;
- to encourage research, particularly that which furthers the purposes of reservation;
- to protect the game reserve against, and rehabilitate the game reserve following, adverse impacts such as those of fire, introduced species, diseases and soil erosion on the game reserve's natural and cultural values and on assets within and adjacent to the game reserve;
- to encourage co-operative management programs with Aboriginal people in areas of significance to them in a manner consistent with the purposes of reservation and the other management objectives;

This management plan elaborates upon and gives emphasis to these general objectives in the light of the particular circumstances, issues and values which prevail in the North East River Game Reserve.

1.3 Plan Scope and Structure

Part A of the plan briefly describes existing conditions, including values of the area, existing facilities and current visitor use. Part B of the plan contains the specific management objectives, and prescriptions, and provides the basis for allowing low key recreational use of the area while protecting environmental values. Part C details how the plan will be implemented in stages concurrent with a monitoring program to assess any changes to the reserve and evaluate the effectiveness of management strategies.

Part B constitutes the statutory management plan as required by the *National Parks and Wildlife Act 1970*.

1.4 Plan Implementation

The actions proposed in this plan will be undertaken in stages. Many actions are subject to the determination of funding priorities.

Section 2

Features of the Reserve

Only limited information is available on the geoheritage, flora, fauna and cultural heritage values of the reserve. For now this knowledge base must suffice as a basis for management.

2.1 Climate

The Bureau of Meteorology keeps rainfall records for Wingaroo, a farming property adjacent to the game reserve.

The mean annual rainfall at Wingaroo is 744 millimetres. The wettest months are May to August, with mean rainfall between 70 and 80 millimetres. Driest months are January and February with mean rainfalls between 40 and 45 millimetres.

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Winds, recorded by the Bureau of Meteorology at Flinders Island Airport some 35 kilometres to the south, are predominantly out of two general directions, ENE and WSW. Common all year, the ENE winds usually vary from light to strong breezes. They infrequently blow above 30 km/hr during winter and are most strong in mid summer, but infrequently above 40 km/hr. Winds from the WSW are common all year, and predominate from August through December. They vary from light winds to gales. The windiest months are September to January.

Temperatures, recorded at Flinders Island Airport, reflect a mild temperate maritime climate. The mean daily maximum and minimum temperatures are 17.6°C and 9.7°C respectively. The warmest months of January through March have mean maximums in the low 20s°C. The coolest months of June through August have average daily maximums of between 13 and 14 °C degrees.

Management Issues

While the temperatures of the island are mild, it is frequently windy. Visitor facilities should, where possible, be sited for maximum protection from these winds.

2.2 Geoheritage

In broad terms the geology of the Furneaux Group can be characterised as a Palaeozoic basement consisting of folded quartzites and argillites (the Mathinna Beds) intruded by granites, and then overlain by a superficial layer of unconsolidated Cainozoic sediments (from Vicary 1987, in Dixon 1996).

The granitic intrusions are now exposed as peaks, rising above the largely drowned Bassian Plain. This plain has, through successive glaciations, been cyclically drowned and revealed. The last glacial maximum, revealing the plain and land bridge connection to mainland Australia, occurred about 18,000 years ago. The post glacial sea level rise stabilised at current levels about 6,000 years ago.

Following the establishment of present sea levels on Flinders Island, a steady supply of fluvial sands has resulted in the development of an extensive parallel coastal dune system on the east coast (Sutherland & Kershaw 1971, in Dixon 1996). Extensive coastal lagoon formation has also occurred on the wide eastern plain during this period.

The parallel dunes, estuary and spit within the North East River Game Reserve are part of this recent depositional landscape. The parallel dune system is remarkably well developed, with at least 14 separate dunes and swales being identifiable. The spit is extensive, being about five kilometres long. It is formed by longshore drift along Foochow Beach, enclosing the North East River estuary behind. Many small recurved spits have developed within the estuary (on the back of the major spit) because of tidal currents. Dixon (1996) identifies the North East River Spit as a feature of outstanding significance for the local region.

Natural erosion processes, including current and wave action, have on the western (inland) side of the estuary revealed an active sand cliff edge up to 4 metres high. This cliff edge reveals a section of marine/dunal deposits and has considerable scientific interest. The section is of Late Pleistocene sedimentary material consisting of shell-rich skeletal carbonate sand. Comparison with similar deposits on the

Tasmanian mainland (typically higher above sea level) facilitates understanding of the neotectonic history of the region. The feature is of representative significance and is outstanding for the local region (Dixon 1996).

Management Issues

Sand landforms are inherently sensitive to disturbance. However in the case of the spit and parallel dune system, both features are large scale and relatively inaccessible, and hence not currently threatened. Land clearance, burning, vehicular use and track construction may all result in degradation. Aerial photography indicates the vegetation over the parallel dune system has been subject to burning.

In the case of the sand cliff, natural slumping is obscuring part of the section, however trampling of slopes by pedestrians from nearby informal camping and occupation sites is almost certainly accelerating degradation.

2.3 Flora

The reconnaissance vegetation map (Harris 1986) of the game reserve (see Map 3) indicates the major vegetation types of the reserve comprise four longitudinal bands, being from west to east: sedgeland-heath mosaic, eucalypt woodland, estuarine complex and coastal sand dune complex. Each vegetation type is described below (from Harris 1986, also see Appendix 1).

Sedgeland-heath mosaic: This broad vegetation type is a fire disclimax, encompassing many specific vegetation communities, depending upon soil type, fire frequency and drainage. Typical species include the grass tree *Xanthorrhoea australis*, teatree *Leptospermum scoparium*, cutting grass *Gahnia* sp., *Banksia marginata*, *Selaginella uliginosa*, *Isopogon ceratophyllus*, and *Leucopogon* and *Lepidosperma* species.

Eucalypt woodland: *Eucalyptus nitida* is the dominant of this vegetation type, and is typically of mallee form, up to 4m in height. Further north on deeper soils, taller eucalypts grow including *E. globulus* and *E. ovata*, along with *Allocasuarina verticillata*. The understorey is variously heathy or sedgy. Typical species are *Banksia marginata*, *Acacia suaveolens*, *A. genistifolia*, *Melaleuca ericifolia* and *Isopogon*, *Leucopogon* and *Lepidosperma* species.

Estuarine complex: These generally low boggy areas will be dominated by *Poa* grasses, *Juncus* and other sedges and saline herb fields. The estuary proper contains extensive sea grass meadows (probably *Heterozostera tasmanica*), patches of sea lettuce (*Ulva* sp.) and red and brown algae. Sea grass meadows are primary producers in estuarine systems, significantly underpinning the faunal food chain

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Coastal sand dune complex: The dune vegetation is probably typical of the area and commonly includes *Olearia axillaris*, *Leptospermum laevigatum*, *Carpobrotus rossii*, *Isolepis nodosa*, *Leucopogon*

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parviflorus, *Rhagodia cadolleana*, *Spinifex sericeus* and *Tetragonia implexicoma*.

Apart from these four dominant broad vegetation types, the vegetation map (see Map 3) also indicates fire excluded remnant areas of closed scrub and forest, chiefly occurring on the western (protected) side of lagoons. These communities variously contain, or are dominated by *Acacia mucronata*, *Allocasuarina monilifera*, *Hakea teretifolia*, *Melaleuca ericifolia*, *M. gibbosa*, *Callitris rhomboidea*, *Banksia marginata* *Eucalyptus globulus*, *E. ovata*, *E. nitida*, *Leptospermum laevigatum* and *L. glaucescens*.

The weed status of the reserve has never been formally assessed. Many garden ornamental plant species have been introduced to the reserve in the immediate vicinity of occupation sites (see Section 3.4). It is also likely that several weed species are present in the coastal sand dune complex including sea spurge *Euphorbia sparrmanii*, beach daisy *Arctotheca populifolia* and various cakiles including *Cakile edentula*. Additionally, there is also clear evidence that in the past cattle have grazed the interior of the reserve (Harris, pers comm). It is therefore likely that some pasture weeds including thistle are present. However generally heathlands are not considered particularly susceptible to weed invasion and weeds are currently not perceived as a reserve management problem.

Management Issues

Sea grass meadows are most sensitive to elevated nutrient loads, with dramatic decline in their extent being usually associated with urban and agricultural development elsewhere in Australia. Because the estuary is open to the sea continuously, substantial flushing occurs with each tide, and eutrophication and sedimentation has not appeared as a significant issue to date.

The remnant closed scrub and forest areas have special botanical interest because of the lower fire frequency than surrounding country.

Olearia axillaris dominated coastal dune vegetation, identified at the northern end of the game reserve, is considered to be poorly reserved in Tasmania (Kirkpatrick & Harris 1995).

The reserve contains representative samples of a number of lowland heath communities typical of north Flinders Island. These communities are rare and poorly reserved in Tasmania (Kirkpatrick 1977) and are of high conservation significance.

There is a need for a more detailed botanical knowledge of the reserve particularly of threatened species and weeds.

2.4 Fauna

North East River Game Reserve is an important site for birds, with a range of bird communities being associated with different habitats. No systematic surveys of the avifauna of the reserve have been undertaken, but field sightings have been variously recorded (see Appendix 2).

Around the mouth of the estuary it is common to sight many coastal water birds and migratory waders.

Birds of particular conservation significance found in the reserve include the fairy tern *Sterna nereis* and two migratory birds the Caspian tern *Hydroprogne caspia* and the eastern curlew *Numenius*

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madagascariensis. The fairy tern is known to breed in the reserve and is listed as rare (*Threatened Species Protection Act 1995*), while the Caspian tern and eastern curlew are protected under the Japan/Australia Migratory Bird Agreement and the China/Australia Migratory Bird Agreement.

Another bird of conservation significance almost certainly found within the reserve (but not confirmed) is the nationally vulnerable hooded plover *Charadrius rubricollis*.

No systematic surveys of mammals or the invertebrate fauna have been undertaken in the reserve, however it contains the typical habitat of all Flinders Island mammals except perhaps the potoroo.

The estuary, associated meadows and marshes provide important habitat for many marine animals. Species include soldier crabs *Mictyris* sp., yellow eyed mullet *Aldrichetta forsteri*, several species of gobies family *Gobiidae*, hardyheads family *Atherinidae*, garfish *Hyporhamphus melanochir*, greenback flounder *Rhombosolea taparina*, Australian salmon *Arripis trutta* and soldier fish *Gymnapistes marmoratus*. Anecdotal evidence has indicated a general decline in the abundance of the local fishery in recent years.

The reserve contains extensive habitat for the ground parrot *Pezoporus wallicus*, which has been recorded on Flinders Island (Green 1969, in Harris 1983). This species is restricted to heath and sedgeland habitats, and has suffered a massive reduction in its range throughout South East Australia.

The reserve contains preferred habitat of the New Holland mouse, *Pseudomys novaehollandiae*, which is listed as 'rare' in Schedule 5 of the *Tasmanian Threatened Species Protection Act 1995*.

A feral population of domestic pig *Sus scrofa* is well established within the game reserve. The feral cat *Felis catus* is also present in the reserve.

Management Issues

Feral pigs within the reserve are responsible for habitat damage. In their search for the edible tubers of wetland plants pigs up-root vegetation and cause extensive soil disturbance. This disturbance can destroy soil structure, promote erosion and invasion by weeds, displace invertebrates and hasten drying out. Pigs may be the vector of diseases such as the root fungus *Phytophthora cinnamomi*.

Anecdotal information suggests that feral cat populations are rapidly increasing on Flinders Island, and may present significant threats to fauna of the reserve, particularly bird life.

Vehicular access to beaches is an activity in direct conflict with the protection of coastal birds and almost certainly causes the annual destruction of eggs and chicks of beach nesting birds such as plovers, dotterels, oystercatchers and terns. Regulation of vehicular access is particularly critical in the areas close to the mouth of the estuary, where bird activity is more concentrated.

2.5 Landscape

The area has high scenic values, particularly near the estuary mouth where the granites of Holloway Point project into the estuary and

ocean, and panoramic views are obtained of offshore islands and the distant Patriarchs.

Management Issues

Existing development in the area, particularly associated with the occupation sites along the narrow strip between the estuary and the North East River Road (see Section 3.4) already has visual impact on the area. As well, clearing and development occurring on the ridge to the west of the reserve is increasingly visible from the waters of the estuary.

2.6 Aboriginal Heritage

It is believed that Aborigines migrated into Tasmania across the now drowned Bassian Plain. Considerable evidence now exists of their past occupation of the Furneaux islands, which are the remnant terrestrial portions of the former land bridge. It is thought Aboriginal occupation of the Furneaux Group ceased about 4,500 years ago recommencing post contact.

Aboriginal sites on the islands are of special significance for the Tasmanian Aboriginal community. Sites also provide evidence as to the overall pattern of prehistoric land use in the Furneaux region.

No sites have been recorded for the North East River Game Reserve. The area around the game reserve has been extensively surveyed by Sim (1989), including the late Pleistocene sedimentary section (see Section 2.2) but this work has revealed no sites. Earlier work recorded by Orchiston (in Sim 1989) reveals isolated artefacts that had been previously collected in the area. Sim (pers comm) suggests the mobile geomorphology of the area does not lend itself to stratified deposits, making the future likelihood of finds, other than isolated artefacts, low.

To date there has been only limited work identifying the Aboriginal cultural heritage resources within the reserve, or establishing appropriate management and protection regimes. Aboriginal community organisations must be critically involved in such work.

2.7 Historic Heritage

The area has an eventful post-contact history as briefly summarised below.

The first official settlement on Flinders Island commenced in 1831, with the relocation of G A Robinson's Aboriginal station from Gun Carriage (Vansittart) Island to The Lagoons on the south-west coast of Flinders. The settlement later moved north to Wybalenna, finally closing in October 1847. During the station years the Aboriginal community often conducted hunting parties throughout Flinders and the offshore islands (Plomley 1987). These trips encompassed the North East River region with its abundant waterfowl and eggs (Aboriginal Land Council of Tasmania 1998).

Following the settlement's closure Flinders Island, in entirety, was leased until the late 1880s. During this period several Aboriginal families came to be associated with the North East River area including the Beetons and the Smiths. Henry Beeton (1835-1913) may have been living in the area as early as 1860 (Aboriginal Land Council of Tasmania 1998).

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By the late 1880s the move to open up the Island for selection had begun in earnest. George Boyes, who took up land at Palana in 1889, is credited with being the first official land owner in this period. During that same year the Wybalenna site was also sold, as were several subdivided blocks of land at the mouth of the North East River. The Aboriginal community was at the forefront of land ownership in the North East River area with land grants dated 1895 to John Smith the Younger, Sarah Beeton (Henry Beeton's wife) and Mary Alice Beeton (Henry Beeton's niece) (Aboriginal Land Council of Tasmania 1998).

By the turn of the century a bustling community had developed at Whitemark. Land subdivision proceeded rapidly after this, and by the end of 1911 most of the land in the north-east with frontages to the North East River had been selected. During this era the Beeton, Smith and Maynard families formed a cohesive Aboriginal community at North East River, providing "boat cartage and boat and farm labour for the white settlers, much of it to the Inner Sisters" (Aboriginal Land Council of Tasmania 1998). For the Aboriginal community a major appeal of the area was the rich food resources of the estuary. Diary accounts indicate it "teemed with silver bream, flounders, salmon and many more varieties" while the surface would at times "be black with swans and other water birds" (Aboriginal Land Council of Tasmania 1998).

Much of the land on the north eastern end of Flinders Island was considered of marginal agricultural potential, and remained as unallocated Crown land until its reservation in 1991 (see Section 1.1).

No systematic surveys of post contact heritage have been carried out within the boundaries of the game reserve. The Tasmanian Historic Places Inventory does not contain any entries for the area.

In 1877 the steel ship *City of Foochow* came ashore and was lost on the sandy north-east coast of Flinders Island. The wreck site is 10 km south of the present game reserve. The vessel was carrying 1,101 tons of coal, some of which still washes up on the shores of the reserve.

Many occupation sites exist within the reserve (see Section 3.4). The sites are likely to have social significance to the people occupying them, as they facilitate their recreational use of the area. The sites are unlikely to have historical or aesthetic values, demonstrating techniques of low-cost vernacular construction which are neither rare or of particular architectural or technological merit.

Management Issues

The single biggest issue for cultural heritage management in the reserve is a lack of baseline knowledge.

2.8 Fire

In the millennia preceding European settlement the archaeological evidence suggests there were probably no human induced influences such as fire on the vegetation of the Furneaux Group. The islands therefore are of potential interest in providing remnant examples of fire excluded vegetation (Harris 1989).

Since settlement fires have become widespread and frequent on Furneaux islands including Flinders. The flora reconnaissance (see Section 2.3) indicates the reserve has been extensively burnt. Aerial photography suggests the vegetation covering the parallel dune system

has been subject to extensive burning, although ground reconnaissance suggests such burning may have occurred at least 20 years ago. Despite the heavy burning, small remnant fire excluded *Callitris* dominated scrub communities (see Section 2.3) are often found adjacent to many of the lagoons of the reserve. These remnant communities are of conservation significance (Harris 1989).

Local residents report that a fire truck used to be stationed in the area, and specific fire management practices observed, but that this is no longer the case.

The reserve's management authority has a responsibility to protect life and property from the consequences of fire. As well the maintenance of specific conservation values may depend upon periodic low intensity fires.

Management Issues

The management authority has not carried out a systematic assessment of the reserve's current bush fire risks and appropriate responses.

The southern boundary of the reserve abuts private land which may need some level of protection.

The conservation significance of the fire excluded remnant plant communities would be lost if they were burnt.

Maintenance of many heath species as well as the habitat of the New Holland mouse and the ground parrot (see Section 2.4) depends upon periodic burning.

Section 3

Existing Uses and Facilities

3.1 Boundaries of the Reserve

When the North East River Game Reserve was proclaimed in 1991, there were two large freehold parcels that lay within the reserve boundary which became wholly surrounded by the reserve. At the time of proclamation it was generally agreed that negotiations would be entered into for the purchase of freehold land 'captured' by reserve boundaries, preferably by exchange with Crown land further to the south.

In 1994 negotiations were concluded for the purchase of most of the northern most of the two parcels. This consisted of 56.02 hectares of freehold land. The addition automatically became a conservation area, but it has not yet been formally added to the game reserve. The remaining small freehold block is being retained as a private retreat with no expectation of vehicle access.

Negotiations have not been proceeded with for the purchase of the southern private land parcel which includes much of Gin Bottle Lagoon. The lagoon system has wildlife habitat values.

Management Issues

To ensure consistent management, the conservation area within the game reserve needs to be formally added to the game reserve.

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The existence of private land within the reserve may in the future make consistent management difficult. The included land may have infrastructure requirements such as roads and power that would need to pass through the reserve. Activities and development on the private land may impact upon the visual or environmental values of the reserve.

3.2 Surrounding Land Use

The tenure of land surrounding the North East River Game Reserve is shown in Map 2. The Flinders Council *Planning Scheme No 1 1990* (S.46) zones all the private land around the reserve as rural. Permitted uses include a house, forestry, extractive industry and agriculture. Discretionary uses include rural industry, abattoir, holiday cabins and timber mill. Generally the minimum lot size is 80 hectares. In summary, the planning scheme allows for limited continuing development of the area.

Within the catchment of the North East River, ongoing development is evident. Shack development is occurring on private blocks to the west of the game reserve. Tree farming of *Pinus radiata* and grazing are occurring on larger parcels.

Management Issues

The pattern of surrounding tenures means the estuarine system remains vulnerable to sedimentation from surrounding soil disturbance and the effects of fertiliser and/or agricultural chemical run-off. Agricultural practices which do not result in sediment or fertiliser run-off would be preferable.

Subdivision and the uncontrolled proliferation of shacks in the area also has the potential to greatly reduce the productivity of the estuarine system. Careful control of further development in the area should aim to avoid elevating nutrients or turbidity in the estuary.

3.3 Access to the Game Reserve

Vehicular access to the reserve is usually gained via the North East River Road. This road is not reserved. The section skirting the estuary is believed to approximately follow the western boundary of the reserve. While much of the road will lie within the reserve it almost certainly also extends across private land. The road has been constructed and maintained by the Flinders Council and has been gradually improved over the last 25 years to the point where it now provides safe, easy access to the area. Easier access has tended to accelerate development.

Other vehicular tracks into the reserve include Edens Road, a much older, but reasonably well formed track from Palana, and several rough bush tracks leading into the southern regions of the reserve. These southern access points, for the most part, branch off a well defined track that follows the southern boundary of the reserve. Vehicles also enter the reserve along Foochow Beach.

The reserve is also accessed by boat (see Sections 3.6 and 3.7).

Management Issues

The *National Parks and Reserves Regulations 1971* state:

Except with the permission of the Director, a person shall not take, drive, or use a vehicle in a game reserve, except on a road.

Regular vehicular access to the reserve for hunting purposes was common before its reservation.

Driving vehicles on beaches has been demonstrated elsewhere in the State to disturb wildlife, including the nesting of the hooded plover *Charadrius rubricollis*, (which almost certainly nests on Foochow Beach) and temporary haul-outs by seals.

With increasing numbers of Tasmanians owning four wheel drive vehicles many wild areas are facing increased vehicular use, resulting in track degradation and track proliferation problems. Track proliferation results in direct damage to flora and fauna and increases the likelihood of introductions, including cats and other feral animals, weeds and pathogens like *Phytophthora cinnamomi*. Fire frequency may also increase.

3.4 Occupations

Flinders Island residents claim a special attachment to the area around the North East River estuary as a location for family summer holidays. The area has a history of establishment and incremental development of permanent summer occupation sites within the Crown reserve, spanning at least a thirty year period. Many of these occupation sites were in existence well before the area was declared a game reserve. Their existence has long been a source of conflict, often leading to an entrenchment of continued occupation. Both the Parks and Wildlife Service and Crown Land Services have in the past taken action to restrict occupations. At the present time occupation sites within the reserve are thought to number over 20, contained within the narrow strip of land between the North East River Road and the edge of the estuary (see Map 4). Of these sites, 10 are currently licensed with the remainder being illegal occupations under the *National Parks and Reserves Regulations 1971*. Each site typically consists of a small clearing with caravan/shed, cooking shelter, longdrop toilet and showering enclosures and associated fencing for screening and wind protection. The sites continue to develop as 'improvements' are made.

Since 1996 the Flinders Council and the Flinders Islands Camp Occupiers Association have been working in conjunction with the Parks and Wildlife Service and Crown Land Services to develop a long term occupation strategy acceptable to all parties. A critical aspect of a long term strategy has been the provision of a practical alternative area for occupation. A Crown land block of approximately 12 hectares on the north west boundary of the reserve is currently being transferred to Flinders Council to be developed for the purpose.

Management Issues

The Tasmanian *State Coastal Policy* directs, among other things, that within the coastal zone; shack expansion on public land not be permitted; free public access should be maintained where possible; mobile landforms should not be built upon; and that maintenance of water quality is critical.

The existence of occupation sites so close to the estuary almost certainly impacts upon water quality and nutrient levels, as well as restricting free public access, reducing aesthetic values, and

Part A - Management Context

contributing to the destabilisation of estuarine sand formations. While many of the individual impacts may be small the cumulative effects of incremental development urgently require addressing. As well the occupations are almost certainly in breach of the Council planning scheme, the Building *Code of Australia* and public health regulations.

3.5 Hunting

Under the provisions of the *National Parks and Reserves Regulations 1971* the hunting of designated game species may occur within a game reserve. In the case of the North East River Game Reserve, an authority to hunt waterfowl (ducks) in the reserve is usually published in State newspapers annually. Only hunters licensed under the *Wildlife Regulations 1971* may take duck in the reserve.

During the 1996 season authorised agents issued between 15 and 20 licences for duck shooting. Records indicate that for the last 5 years demand for duck shooting licences has been static.

Wild pig hunting also occurs in the game reserve.

It is thought shooters currently access the game reserve by vehicle from Foochow beach and via numerous rough vehicular tracks that exist in the southern end of the reserve.

Management Issues

Hunting is probably the primary incentive for vehicular use within the reserve. As discussed in Section 3.3, track degradation and proliferation is often a primary management issue in wild areas, with many possible accompanying consequences.

While it is not the intention of the management authority, it appears there are currently problems with the legal basis for pig hunting in the reserve.

3.6 Commercial Fishing

Commercial crayfishers currently use the North East River Estuary to moor their boats between fishing trips.

There are only two safe all weather small boat anchorages on Flinders Island, one at Lady Barren and the other in the North East River estuary. In easterly weather the seas across the bar of the North East River estuary can break heavily, particularly on an ebb tide, and life threatening mishaps are not uncommon. Despite dangers, the last several years have witnessed an increase in the use of the estuary by the commercial fishery. The fishing fleet using the estuary is thought to currently number about six large, but trailerable boats, owned or operated by Killiecrankie fishers. The fishers use a portion of the estuary foreshore (see Map 4) for car, trailer, dingy and fish cauf storage. Boat refuelling and maintenance operations are carried out within the estuary. Some hardening of the foreshore has been carried out, but the use zone extends well beyond the hardened surface. As well, a longdrop toilet has been provided for use by the public.

Several moorings have been laid within the estuary, and are administered by the Flinders Island Port Company.

Part A - Management Context

At present no directions are provided for use of the area by the commercial fishing fleet, although the *National Parks and Reserves Regulations 1971*, Section 5A(1) states:

The managing authority may display signs or notices at or near a water within any reserved land prohibiting or restricting the use of vessels, or giving directions with respect to the use on that water.

Management Issues

Concern has been raised verbally and in writing by the community and the Flinders Council about the possible negative effects of commercial fishing boats operating in the estuary. Community concern has centred on effects to the local fishery as a result of refuelling spills, bottom damage from the movement of these relatively large high powered vessels, lubricant, fuel and other chemical spills as a result of maintenance operations and possible excessive commercial netting within the estuary.

There is no jetty or fuel handling infrastructure within the Reserve, and deeper water is well away from the estuary edge. Fuel is transferred to fishing boats either by dinghy in loose containers, and then transferred into onboard tanks by funnel, or by hose across the water from shore based road tankers. Fuels and oils used are generally of low volatility and of significant volumes. The potential for fuel and oil spills to occur and the vulnerability of the estuarine environment to damage provides a significant management issue.

The Parks and Wildlife Service has also had concern with impacts on the shore ecology and visual environment associated with storage of trailers, caufs, cars, dinghies, fuel drums and other equipment.

3.7 Recreational Boating & Fishing

Nearly all boating activity within the North East River Game Reserve is linked to recreational fishing and the majority of recreational fishers are assumed to be local residents. The area has wide local patronage, particularly during summer (see Section 3.4). Drifting for flathead, spinning for salmon, flounder spearing and dip netting for prawns are all popular pursuits. The area also attracts fishers from further afield.

The North East River estuary and surrounding ocean beaches are noted in national fishing publications for prolific fishing, and the area is known to attract a wide fishing audience. Indeed, around 18% of visitors to Flinders Island report they go sea fishing, more than go sight seeing or touring.

The area is also visited by fishing tours (see Section 3.9).

The *Fisheries (Scalefish) Rules 1998* prohibit the use of a net, other than a landing net, in North East River and Arthurs Creek, upstream from an imaginary straight line from the eastern extremity of Holloway Point south to the northern extremity of Foochow Beach.

Most recreational boating within the estuary is confined to small open dinghies with outboard engines. Fuels used are in small quantities, of high volatility and are contained within industrially standardised containers with low risk of spillage.

Management Issues

Anecdotal evidence indicates the quality of the fishery in and around the area of the reserve has been in decline in recent years. Given the value of the local fishery as a recreation asset for locals and visitors alike, there is a need for more knowledge in order to shape specific management responses.

Local recreational fishers wish to see a formed boat ramp constructed.

3.8 Navigation Light

The Marine and Safety Authority of Tasmania own and maintain a marine navigation light within the reserve. The light is situated on Holloway Point (see Map 4), is solar powered, and requires only occasional vehicular access for maintenance.

3.9 Leases, Licences and Permits

There are currently ten licences of occupation issued under the *National Parks and Wildlife Act 1970* (see Section 3.4).

There is one licence agreement currently valid for operating fishing and four wheel drive tours throughout Flinders Island, including the game reserve. This licence extends only to tours on formed roads and tracks, and specifically excludes crossing sand dunes.

There are no other licensed commercial operations within the reserve.

Management Issues

The *National Parks and Wildlife Act 1970* prohibits the conduct of commercial activities in any reserve without a valid licence. Unauthorised tours may be occurring within the reserve.

3.10 Walks

Anecdotal evidence indicates that during summer the estuary beach is frequently walked, and that family groups with boats often cross the estuary and spit to walk Foochow Beach.

Many tourists to Flinders Island go walking. Around 39% of all visitors report taking recreational walks while 25% go bushwalking (Flinders Island Visitor Survey 1994).

No formal walking tracks are designated within the reserve.

Management Issues

With increasing visitation to the area (see next Section), the absence of short walk opportunities in the area decreases its potential enjoyment by day users.

3.11 Day Use/Tourism/Sightseeing

Near the mouth of the estuary on Holloway Point is a small day use area, with several picnic tables and associated fireplaces and a single longdrop toilet (see Map 4). Two free standing interpretation panels have been located on the edge of this precinct as part of the recent Flinders Island Ecology Trail project (see Section 3.13).

Part A - Management Context

Visiting natural areas is popular on Flinders Island with almost half the island's total visitors visiting Strzelecki National Park (Flinders Island Visitor Survey 1994). Around 60% of visitors go to Killiecrankie, and many of them are likely to continue on to the North East River Game Reserve. The Flinders Island Ecology Trail project is likely to lead to increased visitation to the area.

Management Issues

The relationship of parking, vehicular and pedestrian circulation areas, and views suggest the day use area may have been better developed.

3.12 Camping

There are currently no Parks and Wildlife Service designated and developed camping areas within the North East River Game Reserve, but there are several informal camp clearings.

Two camp clearings situated near the estuary mouth (see Map 4) appear to be well established and used. There are no signs indicating the presence of these camping areas, which for the most part are not obvious from the road. While the pattern of usage of these camping clearings is not currently well understood, it is assumed most campers are attracted to the area for the fishing. It is likely that a small but increasing number of campers are 'fly drive' tourists drawn to the area by its natural values.

Management Issues

The principle concerns associated with camping areas are eutrophication of the estuary, habitat loss from fire wood collection and expansion of areas with associated vegetation loss, resulting in possible dune destabilisation.

From a wider regional perspective, the absence of clearly defined camping opportunities may limit the area's use and appreciation by tourists.

Managing camping facilities is expensive, particularly the provision of services.

3.13 Signs And Interpretation

Currently there is a single sign on the North East River Road as the road enters the reserve, which reads:

North East River Game Reserve
Picnic Area
Be Careful With Fire
Protect Our Shoreline.

The sign does not indicate that the area is managed by the Parks and Wildlife Service. There are no signs directing visitors to the boat launching area, the camping or day use areas.

Interpretation within the reserve consists of two free standing display panels set up adjacent the day use area. The interpretation was developed with Commonwealth funding, as part of a co-ordinated suite that collectively form the Flinders Island Ecology Trail. The panels

North East River Game Reserve Management Plan - 1999

within the reserve present information on the importance of the estuarine habitat for fish and seabirds. The information is well presented.

Management Issues

There is a lack of basic direction signs within the reserve.

The current interpretation node would benefit from some site design improvements with respect to the road alignment and parking.

Part B Management Prescriptions

As a general rule, threats to reserve values are a consequence of human activity, therefore it is human activity that is generally the subject of management.

Subject to availability of funding and staff resources, the following prescriptions deal with management of the North East River Game Reserve.

Section 4 Management Objectives

The general management objectives for game reserves have been presented in Section 1.2. Part A of this document has then outlined the specific values, facilities, uses and management issues associated with the North East River Game Reserve. Given the specific on-ground circumstances, additional specific management objectives for the reserve are to:

- Protect vulnerable sand formations, particularly the spit.
- Protect seagrass meadows, particularly from the effects of eutrophication and sedimentation.
- Protect remnant fire excluded vegetation and all poorly reserved vegetation.
- Protect the bird life, particularly rare bird species.
- Maintain a range of post fire ages in the heathland vegetation.
- Protect against the introduction of feral species, weeds or disease.
- Control or eradicate introduced species where practicable.
- Protect the estuarine life.
- Protect landscape values.
- Continue to allow sustainable hunting of waterfowl.
- Work co-operatively with the community to phase out existing occupations over time.
- Work co-operatively with the community to allow other uses to continue, provided such uses are consistent with conservation objectives.

Section 5 Conservation & Protection

5.1 Geoheritage

- Investigate developing suitable pedestrian access points to the estuary edge where problems are occurring with the degradation of sensitive sand land forms.

5.2 Flora and Fauna

- Undertake a more detailed botanical survey of the reserve with particular reference to weeds and threatened species.
- Undertake regular assessments of the spread of weeds in the reserve.

- Take all practicable steps to prevent the further introduction of feral species, weeds or disease to the reserve.
 - Assess the current extent of infection by the root fungus *Phytophthora cinnamomi* in the reserve. Develop specific management responses as required on the basis of this survey.
 - Because the estuary outlet has the highest concentration of bird life and is the most vulnerable to damage, close the northern tip of Foochow Beach to vehicular use, for a distance of one kilometre from the current established mouth south to the major tidal cut-through.
 - Field staff, on the advice of Service specialists, may implement specific actions to control or eradicate existing weeds, introduced diseases and/or feral animals including cats and pigs.
-

5.3 Aboriginal Heritage

- In consultation with the Aboriginal community, determine the necessity of and, if required, undertake a systematic survey of the Aboriginal heritage in the reserve.
 - Assess and protect Aboriginal heritage values in accordance with both the objectives and prescriptions of this management plan and any agreed national or state charter or guidelines for Aboriginal sites.
 - Report all Aboriginal sites discovered in the reserve to the Director, in accordance with the *Aboriginal Relics Act 1975*.
 - Consult the Aboriginal community on any undertaking or development which may impinge upon Aboriginal sites.
 - As far as possible, development will be located well away from areas of Aboriginal heritage.
 - Aboriginal heritage will not be deliberately disturbed for management, development or research purposes unless the Director determines there is no practicable alternative and a permit has been issued under the *Aboriginal Relics Act 1975*.
 - In co-operation with the Aboriginal community, identify and record Aboriginal sites.
-

5.4 Historic Heritage

- Undertake archival and field surveys in order to identify and assess the full range of historic cultural resources within the reserve.
- Register identified sites on the Tasmanian Historic Places Inventory.
- Do not permit disturbance of historic sites and removal of artefacts from the reserve.

Part B - Management Prescriptions

5.5 Protection of Values by Access Restrictions

- Public access to specific areas may be restricted to protect natural or cultural values of high conservation value. Access restrictions are enabled through the use of Regulation 18D of the *National Parks and Reserves Regulations 1971*.

Section 6 Area of the Reserve

- Proclaim the recently purchased 56.02 hectare conservation area lying wholly surrounded by the reserve as an addition to the North East River Game Reserve.
- Prior to and following inclusion in the game reserve, manage the enclosed conservation area in accordance with this plan.
- Consider means to acquire the private land parcel at the southern end of, and surrounded by, the game reserve.

Section 7 Surrounding Land Use

The sensitivity of the game reserve to damage from off-site land use practices requires the Parks and Wildlife Service to increase community awareness of potential issues.

- Negotiate with the Flinders Council and community to promote through the Council planning scheme, environmentally sustainable development in the surrounding area.
- Increases in silt and/or nutrient loads in water draining into the reserve should be immediately investigated.
- Negotiate where possible, for the protection of landscape qualities of the reserve from adjacent development.

Section 8 Vehicular Access

Managing vehicular access is a key component in protecting the reserve's values.

- For the purposes of duck and pig hunting only, allow suitably licensed/permitted hunters vehicular access to the following routes within the reserve:
 - the southern boundary of the reserve,
 - along all but the northern end of Foochow beach (see Section 5.2), and
 - on only one internal route from the south to selected hunting lagoons.
- Negotiate an agreement with the local community on the most appropriate southern access route into the reserve.

Part B - Management Prescriptions

- Issue, under Section 3(1)b of the *National Parks and Reserves Regulations 1971* and through the Senior Ranger Furneaux Islands, renewable 12 monthly permits authorising the possession and use of firearms for the hunting of pigs in the reserve. One dog per person will be permitted for the purpose of tracking and flushing out pigs, with a maximum of four dogs per party.
- Conduct education programs with hunters who use the reserve on impacts of vehicular track proliferation and Parks and Wildlife Service statutory requirements, as well as promoting reserve values.
- Seek the co-operation of hunters who use the reserve in implementing Section 8 of this plan.

Section 11

Commercial Fishing

Maintenance of the estuary water quality requires the co-operation of many sectors of the community. The following prescriptions are the basis of an agreement being sought with commercial fishers operating offshore vessels.

- Prepare, in consultation with the fishers, a site design for the current boat ramp area to provide suitably defined and hardened areas for boat launching, and cauf and dingy storage.
- Adhere to a five knot speed limit within the estuary.
- No refuelling or maintenance activities are to be conducted within the estuary.
- Assist fishers, within existing resource constraints, develop an alternative refuelling facility at the north end of Flinders Island.
- Store boat trailers outside the reserve.
- Report accidental fuel/chemical spills immediately to the Parks and Wildlife Service.

Section 12

Recreational Boating & Fishing

The conservation of the fishery within the reserve is of broad community concern. Community concern for better boat launching facilities is addressed in the previous section.

- Negotiate with the Marine Resources Division of the Department of Primary Industries, Water and Environment and the University of Tasmania to set up a long term monitoring program for the estuary.

Section 13

Licensing of Commercial Activities

The reserve has some potential as a commercial tour resource, and generally such opportunities are supported. It is however essential that activities, either individually or cumulatively, do not undermine the values they are based on.

- Applications for commercial activities should comply with the procedures set forth in Section 18.
- Generally, all infrastructure required to support such activity should be located outside the reserve.
- Applications for commercial tourism ventures should be assessed in consultation with the Flinders Island tourism industry.

Section 14

Visitor infrastructure

The North East River Game Reserve has been a popular venue for recreational activity for far longer than it has been reserved, and that pressure is likely to increase rather than decrease.

Responding to recreational pressure with limited provision of infrastructure is likely to diminish human impact upon the values of the reserve.

14.1 General Requirements

Any proposals for recreational infrastructure within the reserve are subject to the following prescriptions:

- Development is subject to the availability of funding.
- Development or major redevelopment must be preceded by a comprehensive site analysis and site design process.
- Development should be consistent with levels of use.
- Consult with the local community and users during the planning stages.
- Ensure facilities are low-key and of a scale and design which is visually unobtrusive.
- Design, locate and construct facilities for long term serviceability, low maintenance and cost effectiveness.
- Development must comply with the procedures set forth in Section 18.

14.2 Walks

- Consider development of a short walk commencing at the day use area.

Part B - Management Prescriptions

- The standard of construction of the walk will be W1 or W2, as set out in Hawes (1994).
 - No other formal walking tracks are to be constructed.
-

14.3 Day Use/Tourism/Sightseeing

- Consideration may be given to the redevelopment of the day use area to include more coherent parking arrangements and appropriate picnic facilities that maximise the potential of the site.
 - Day use will continue to be in the current area (shown in Map 4), unless a comprehensive site analysis and site design process indicates otherwise.
-

14.4 Camping

- Consider, in consultation with the Flinders Council, development of a formal camping area, particularly the provision of minimal impact toilet facilities.
 - Evaluate the best location for any formal campground by a comprehensive site analysis and site design process.
-

14.5 Signs and Interpretation

- Consideration may be given to developing a limited but co-ordinated suite of directional signs within the reserve, consistent with the Current Service Manual.
 - Use interpretation to enhance visitor understanding and appreciation of the environmental and heritage values of the area, foster appropriate visitor behaviour and explain management strategies.
-

14.6 Fishing Facilities

- Consider improvement of hard standing, parking and boat launching facilities in the reserve (see section 11).
-

Section 15

Fire

Appropriate risk management and ecological fire management strategies are essential to the overall management of the reserve.

- Develop a fire management plan for the reserve.
- In the absence of a fire management plan carry out periodic slashing along the southern and western boundary lines adjacent to private property to assist fire control.
- In undertaking fire management, protect environmental and heritage values in so far as this is consistent with the protection of human life and property.
- In undertaking fire management, prioritise the protection of the remnant, fire-excluded plant communities where possible.

- In undertaking fire management, maintain a mosaic of fire exclusion in the reserve's heaths, as well as prioritising the protection of habitat for the New Holland mouse and the ground parrot.
- Design, construct and manage all facilities to minimise the likelihood of fire escapes.

Section 16

Research

Research, involving surveying, recording, monitoring and analysing, aids the conservation of reserve values.

- Before fieldwork commences, a written permit will be required from authorised staff for manipulative research not undertaken by Parks and Wildlife Service staff.
- One copy of research reports will be provided to the District Office and one copy will be lodged with the library servicing the Parks and Wildlife Service.
- All research is to be undertaken in a manner which is consistent with this management plan, and must not have any long term adverse effects on the environmental, heritage or aesthetic values of the reserve.

16.1 Priorities for Research

The following priorities are established for research and monitoring programs.

- Establishing baseline data on the geoheritage, flora, fauna and cultural heritage of the reserve.
- Establish the erosion status of sandy coastal areas in the reserve and causes of disturbance.
- Research into the ecological effects of fire on soils, vegetation and habitat of the reserve. Permanent vegetation plots may be established as study sites.
- Monitoring and research on the distribution, numbers and control of feral animals, weeds and diseases, particularly *Phytophthora*.
- Systematic, reliable recording and analysis of visitor numbers, profiles and impacts.
- Water quality monitoring to assess the extent activities within or external to the reserve impact values.
- Research and monitoring of seagrass ecology and associated fish life.

Section 17

Management Arrangements

The plan area falls within the Central Northern District of the Parks and Wildlife Service management structure, while the Senior Ranger, Furneaux Group has day to day management responsibility.

- The prescriptions of this plan are subject to the provisions of funding and other resources sufficient to meet them, and may be prioritised by the Director of National Parks and Wildlife at the Director's discretion according to resource availability.
- Where practicable, link with other external programs that may assist in furthering prescriptions contained in this plan.
- Train staff to implement the objectives and prescriptions of the management plan.
- When suitable planned and programmed works and adequate supervision are available, encourage volunteers to assist with such activities as environmental restoration, construction works, site maintenance, and supervision .
- Co-ordinate development, protection and conservation work within a five year works program for the reserve.
- Review the works program annually. Add a further year's program at each annual review.
- Monitor the efficacy of management practices in the reserve, and where necessary, modify those practices.
- Within the reserve, authorised staff of the Parks and Wildlife Service will enforce the provisions of the *National Parks and Wildlife Act 1970*, *National Parks and Reserves Regulations 1971*, *Aboriginal Relics Act 1975*, *Whales Protection Act 1988*, and the *Wildlife Regulations 1971*.

Section 18

Managing Development

Disturbance to the reserve for the construction of visitor facilities or other limited forms of development need to be carefully managed to minimise impact.

- Ensure all development of facilities and services accords with the prescriptions of this management plan and other applicable plans.
- Ensure all development of facilities or services is compatible with conservation of environmental and heritage values, protection of water quality in the estuary, creeks and streams, protection of recreational and tourism character, and maintenance of visual and scenic quality. In particular, ensure any development requiring earthmoving be first assessed for cultural heritage impact.
- Limit developments to those which:
 - are complementary to existing facilities and services;

- are clearly directed towards optimising visitor appreciation and understanding of the reserve and its values, or public safety; and which
- provide efficient, high quality service to the public.
- Require all commercial development proposals for facilities or services to submit a detailed business and financial plan showing at least a three year projection of operations which demonstrates economic viability.
- Assess all proposals for any development, activity, landscape modification, research, management or maintenance work involving any ground breaking, structural disturbance, or environmental manipulation of any kind in accordance with procedures approved by the Director.
- Require the proponent of any significant development or activity not directly dealt with by this management plan to prepare a comprehensive environmental and heritage effects assessment in accordance with guidelines established by the Parks and Wildlife Service. Make this assessment available for public scrutiny.
- In addition to the requirements of the managing authority for the reserve, ensure all development complies with any other applicable legislation.
- Prepare and approve design concepts and details for each development or activity permitted by this plan in accordance with the above prescriptions prior to the commencement of any work.
- Do not permit variations to the approved design concepts and details unless such changes have been, in the first instance, discussed with the relevant specialist staff and if necessary confirmed and approved by the Director.
- Minimise areas of disturbance arising from any site works permitted by this plan. Where necessary, peg or fence to define the limits of the site which may be disturbed. If trees or shrubs or other site features to be retained occur within this area, protect them for the duration of the works.
- Undertake site works and developments set out or permitted in this management plan in stages, dependent on the availability of funding and other resources.
- Prepare detailed costing for implementing works in conjunction with preparation of design details for those works.

Section 19

Exercise of Other Statutory Powers

Section 24(1) of the *National Parks and Wildlife Act 1970* provides that no statutory powers (within the meaning of the Act) may be exercised in a game reserve unless authorised by a management plan. Such provision requires the approval of both Houses of Parliament. The following statutory powers will be permitted to be exercised in North East River Game Reserve.

Part B - Management Prescriptions

19.1 Marine and Safety Authority of Tasmania

- Subject to this management plan and written approval of the Director of National Parks and Wildlife, the Marine and Safety Authority of Tasmania is authorised to exercise its powers under the *Marine and Safety Authority Act 1976* to provide for the safety and regulation of mariners.
-

19.2 Flinders Council

- The General Manager, Flinders Council is authorised to exercise its powers under the *Local Government Highways Act 1982* to realign, improve, repair and maintain the portions of the North East River Road lying within the North East River Game Reserve, provided that this may only be done in consultation with, and with the agreement of, the Director of National Parks and Wildlife.

Section 20

Revision of the Plan

- The management plan may only be varied in accordance with the procedures set out in Sections 19 and 20 of the *National Parks and Wildlife Act 1970*.
- Review the plan ten years after gazettal of its approval by the Governor, or sooner if research, monitoring, or other circumstances warrant.

Part C Key Implementation Actions

Many of the prescriptions in Part B of this plan detail specific actions to be undertaken. This section lists key actions prescribed. Those prescriptions in Part B of this plan that are not action orientated, but rather are matters of policy requiring implementation as the need arises, do not appear in the list below.

Implementation will depend on the availability of funding and the overall priorities of the management authority.

Note: The officer designated for co-ordinating responsibility is not necessarily the only officer involved, but is responsible for organising action and ensuring it is carried out.

Sect.	Action	Co-ordinating Responsibility
5.1	Investigate developing suitable pedestrian access points to the estuary edge where problems are occurring with the degradation of sensitive sand land forms.	Planning Officer
5.1	Undertake archival and field surveys in order to identify and assess the full range of historic cultural resources within the reserve.	Historic Heritage Officer
5.2	Assess the current extent of infection by the root fungus <i>Phytophthora cinnamomi</i> in the reserve. Develop specific management responses as required.	Flora Protection officer
5.2	Undertake a more detailed botanical survey of the Reserve with particular reference to weeds and threatened species	Senior Botanist/Weed Officer
5.2	Undertake regular assessments of the spread of weeds in the reserve	Senior Ranger
5.3	Undertake a systematic survey of the Aboriginal heritage in the reserve.	Aboriginal Heritage Officer
6.	Negotiate for the purchase of the private land parcel within the game reserve.	Investigations Officer
6.	Proclaim the recently purchased 56.02 hectare Conservation Area as an addition to the reserve.	Investigations Officer
7	Negotiate with the Flinders Council and community to promote environmentally sustainable development in the surrounding area.	Investigations Officer
8	Seek the co-operation of off-road vehicle users in avoiding harassing and disturbing wildlife on the beach.	Senior Ranger
8	Close the northern tip of Foochow Beach to vehicular use.	Senior Ranger
8	Negotiate an agreement with the local community on the most appropriate southern access route into the reserve. Close all other tracks.	Senior Ranger
8	Allow (for the duck season only) licensed hunters limited vehicular access to the following routes within the reserve.	Senior Ranger
9	Offer occupational licences for the reserve	CLS Northern Regional Manager
9	Work co-operatively with the local Council and community to ensure viable alternative shack sites exists in the area.	Planning Officer
10	Issue 12 monthly permits authorising the possession and use of firearms for the hunting of pigs in the reserve.	Senior Ranger
10	Conduct education programs with hunters who use the reserve.	Senior Ranger
10	Seek the co-operation of hunters who use the reserve in implementing Section 8	Senior Ranger
11	Prepare a site design for the current boat ramp area.	Planning officer
12	Negotiate with the Department of Primary Industries and Fisheries to set up a long term monitoring program for the	Planning Officer

Part C - Key Implementation Actions

	Sect. Action	(Co-ordinating Responsibility)
Sect.	Action	Co-ordinating Responsibility
	estuary.	
14.2	Consider development of a short walk commencing at the day use area.	Planning Officer
14.3	Consider the redevelopment of the day use area.	Planning Officer
14.4	Consider development of a formal camping area.	Planning Officer
14.5	Consider developing a limited but co-ordinated suite of directional signs within the reserve.	Interpretation Officer
14.6	Consider development of further hard standing, parking and boat launching facilities in the reserve.	Planning Officer
15	Periodically slash the southern boundary line adjacent to the private 'Wingaroo' pastoral property	Senior Ranger
15	Develop a fire management plan for the reserve.	Fire Management Officer
17	Train staff to implement the objectives and prescriptions of the management plan.	Planning Officer
17	Co-ordinate development, protection and conservation work within a five year works program for the reserve.	Senior Ranger
17	Review the works program annually.	Senior Ranger
17	Monitor the efficacy of management practices in the reserve.	Senior Ranger
20	Review the plan ten years after gazettal.	Planning Officer

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Appendices

Appendix 1 Plants of North East River Game Reserve

source:

PWS Taspaws database

<i>Acaena novae-zelandiae</i>	buzzy, biddy-widdy
<i>Agrostis avenacea</i>	blown grass
<i>Alyxia buxifolia</i>	sea box
<i>Atriplex cinerea</i>	grey salt bush
<i>Baumea juncea</i>	bare twig-rush
<i>Bulbine semibarbata</i>	leak lily
<i>Callitris rhomboidea</i>	Oyster Bay pine
<i>Leucophyta brownii</i>	cushion or snow bush
<i>Calocephalus lacteus</i>	milky beauty heads
<i>Carpobrotus rossii</i>	native pig-face
<i>Centella cordifolia</i>	centella
<i>Chenopodium glaucum ambiguum</i>	
<i>Correa alba</i>	white correa, native fuchsia
<i>Cotula reptans</i>	
<i>Crassula macrantha</i>	
<i>Cyathodes glauca</i>	cheeseberry
<i>Distichlis distichophylla</i>	Australian salt-grass
<i>Eleocharis pusilla</i>	small spike-rush
<i>Eleocharis sphacelata</i>	tall spike-rush
<i>Euphorbia paralias</i>	
<i>Frankenia pauciflora</i>	sea heath
<i>Gahnia trifida</i>	coast saw-edge
<i>Bracteantha bracteata</i>	golden everlasting
<i>Hemichroa pentandra</i>	trailing hemichroa
<i>Hydrocotyle muscosa</i>	mossy pennywort
<i>Isolepis nodosa</i>	knobby or knotty club-rush
<i>Leptospermum laevigatum</i>	coast tea-tree
<i>Leucopogon parviflorus</i>	coast beard-heath
<i>Lilaeopsis polyantha</i>	Australian lilaeopsis
<i>Lobelia alata</i>	angled lobelia
<i>Melaleuca ericifolia</i>	swamp paperbark
<i>Mimulus repens</i>	creeping monkey flower
<i>Muehlenbeckia adpressa</i>	climbing lignum
<i>Myoporum insulare</i>	boobyalla
<i>Myriophyllum salsugineum</i>	water milfoil
<i>Myriophyllum simulans variifolium</i>	water milfoil
<i>Polypogon monspeliensis</i>	
<i>Pratia platycalyx</i>	salt pratia
<i>Ranunculus amphitrichus</i>	buttercup
<i>Ruppia maritima</i>	ruppia
<i>Schoenus fluitans</i>	floating bog-rush
<i>Isolepis cernuus</i>	nodding, low or grassy club-rush
<i>Isolepis inundata</i>	swamp club-rush
<i>Selliera radicans</i>	swamp weed
<i>Actites megalocarpus</i>	coastal sow thistle
<i>Stackhousia spathulata</i>	coastal stackhousia or mignonette
<i>Stylidium graminifolium</i>	trigger plant
<i>Ehrharta acuminata</i>	pointed rice-grass
<i>Triglochin procerum</i>	water ribbons
<i>Villarsia reniformis</i>	yellow or running marsh-flower

Appendix 2 Animals of North East River Game Reserve

Note: The following lists should be regarded as preliminary only

Birds Recorded

coastal water birds

black faced shag	<i>Leucocarbo fuscescens</i>
great cormorant	<i>Phalacrocorax carbo</i>
pelican	<i>Pelicanus conspicillatus</i>
piebald oystercatcher	<i>Haematopus longirostris longirostris</i>
sooty oystercatcher	<i>H. fuliginosus fuliginosus</i>
silver gull	<i>Larus novaehollandiae</i>
Pacific gull	<i>L. pacificus</i>
Caspian terns	<i>Hydroprogne caspia</i>
little pied cormorant	<i>Phalacrocorax melanoleucos melanoleucos</i>
crested tern	<i>Sterna bergii</i>
eastern curlews	<i>Numenius madagascariensis</i>
black swan	<i>Cygnus atratus</i>
masked lapwing	<i>Vanellus miles novaehollandiae</i>

(from a survey by S Blackhall 1988).

others

double banded plover	<i>Charadrius bicinctus</i>
red capped plovers	<i>C. ruficapillus</i>
fairy tern	<i>Sterna nereis nereis</i>
chestnut teal	<i>Anas castanea</i>
green rosella	<i>Platycercus caledonicus</i>
yellow throated honeyeaters	<i>Lichenostomus flavicollis</i>
black headed honeyeaters	<i>Melithreptus affinis</i>
New Holland honeyeaters	<i>Phylidonyris novaehollandiae caudata</i>
golden whistler	<i>Pachycephala pectoralis</i>
striated pardalote	<i>Pardalotus striatus</i>
dusky robin	<i>Melanodryas vittata</i>
silveryeye	<i>Zosterops lateralis lateralis</i>
swallow	<i>Hirundo neoxena</i>
scrub wren	<i>Sericornis frontalis humilis</i>
fantail cuckoo	<i>Cuculus pyrrhophanus prionurus</i>
grey shrike thrush	<i>Colluricincla harmonica harmonica</i>
fairy wren	<i>Malurus cyaneus cyaneus</i>
yellow tail black cockatoo	<i>Calyptorhynchus funereus xanthanotus</i>
forest raven	<i>Corvus tasmanicus tasmanicus</i>

(from a survey by P Brown, 1985)

Fish Recorded

yellow eyed mullet	<i>Aldrichetta forsteri</i>
gobies sp	family <i>Gobiidae</i>
hardyhead sp	family <i>Atherinidae</i>
garfish	<i>Hyporhamphus melanochir</i>
greenback flounder	<i>Rhombosolea taparina</i>
Australian salmon	<i>Arripis trutta</i>
soldier fish	<i>Gymnapistes marmoratus</i>

(from a survey by A Schaap, 1989)

Appendices

Invertebrates

soldier crabs

Mictyris sp.

prawns

family Penaeidae

Fish that may occur in the Estuary

Banded stingaree

Urolophus cruciatus

Pilchard

Sardinops neopilchardus

Blue sprat

Spratelloides robustus

Australian sprat

Sprattus novaehollandie

Australian anchovy

Engraulis australis

Red cod

Pseudophycis bachus

Southern sea garfish

Hyporhamphus melanochir

Small-mouthed hardyhead

Atherinosoma microstoma

Silverfish

Leptatherina presbyteroides

Pike-headed hardyhead

Kestratherina esox

Richardson's hardyhead

Atherinason hepsetoides

Pot bellied seahorse

Hippocampus abdominalis

Half-banded pipefish

Mitotichthys semistriatus

Spotted pipefish

Stigmatopora argus

Wide-bodied pipefish

Stigmatopora nigra

Port phillip pipefish

Vanacampus phillipi

Rough gurnard perch

Neosebastes pandus

Thetis fish

Neosebastes thetidis

Red rock cod

Helicolenus barathri

Soldierfish

Gymnapistes marmoratus

Spiny gurnard

Lepidotrigla papilio

Sand flathead

Platycephalus bassensis

Rock flathead

Platycephalus laevigatus

Southern sea moth

Pegasus lancifer

Southern cardinal fish

Vincentia conspersa

Eastern school whiting

Sillago flindersi

Tailor

Pomatomus saltatrix

Jack mackerel

Trachurus declivis

Silver trevally

Pseudocaranx dentex

Eastern Australian salmon

Arripis trutta

Western Australian salmon

Arripis truttaceus

Luderick

Girella tricuspidata

Big spined boarfish

Pentaceros decacanthus

Yellow eye mullet

Aldrichetta forsteri

Blue rock whiting

Haletta semifasciata

Little rock whiting

Neodax balteatus

Common stargazer

Kathetostoma laeve

Congolli

Pseudaphritis urvilli

Crested weedfish

Cristiceps australis

Ogilby's weedfish

Heteroclinus heptaeolus

Common weedfish

Heteroclinus perspicillatus

Tamar goby

Favonigobius tamarensis

Castelnau's goby

Nesogobius pulchellus

Girdled goby

Nesogobius sp.1

Twin-barred goby

Nesogobius sp.3

Blue warehou

Seriolella brama

Spotted warehou

Seriolella punctata

Bass strait flounder

Arnoglossus bassensis

Long snouted flounder

Ammotretis rostratus

Greenback flounder

Rhombosolea tapirina

Spotted flounder

Ammotretis liturata

Elongate flounder

Ammotretis elongatus

Toothbrush leatherjacket

Acanthaluteres vittiger

Horse shoe leatherjacket

Meuschenia hippocrepis

Velvet leatherjacket

Parika scaber

Brown striped leatherjack

Meuschenia australis

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Pigmy leatherjacket	<i>Brachaluteres jacksonianus</i>
Gunn's leatherjacket	<i>Eubalichthys gunnii</i>
Six-spined leatherjacket	<i>Meuschenia freycineti</i>
Bridled leatherjacket	<i>Acanthaluteres spilomelanurus</i>
Smooth toadfish	<i>Tetractenos glaber</i>

(from A. Jordan, Department Primary Industry & Fisheries)