

**SEA ACRES NATURE RESERVE
PLAN OF MANAGEMENT**

**NSW National Parks and Wildlife Service
September, 1995.**

Acknowledgements: This plan of management has been prepared by Alison Ramsay of Field Services Division with the assistance of Eric Claussen of Port Macquarie District. It is based on earlier Management Guidelines for Sea Acres Nature Reserve prepared by Sue Luscombe and Michael Dodkin.

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FOREWORD

Sea Acres Nature Reserve contains significant geological features and protects an outstanding remnant of the original native plant and animal communities once found along much of the mid north coast of NSW. The littoral rainforest which covers a significant area of the reserve is one of the largest and least modified remnants of littoral rainforest in New South Wales. Its species diversity is nearly double that of other coastal rainforest sites surveyed in the area.

The location of Sea Acres Nature Reserve within a high growth centre and popular tourist destination, and its proximity to other rainforest areas including those of World Heritage status, led to its being chosen as one of three rainforest education centres run by the National Parks and Wildlife Service in NSW to promote the understanding and appreciation of rainforests. A Rainforest Centre and associated 1.25 km boardwalk were constructed in the reserve by the Service in the late 1980s. The centre includes an interpretive display, classroom and cafe/restaurant.

Under this plan of management the Rainforest Centre will continue to provide opportunities for visitors to see and understand the rainforest. The boardwalk will be extended and a lookout will be constructed with views over the rainforest canopy and out to sea. Shelters will also be placed over the stopping areas on the boardwalk.

Research into the native plants and animals on the reserve will continue to be encouraged, as will educational programs and the involvement of volunteers in providing interpretive services to visitors.

Opportunities for low impact recreational use of the coastal edge of the nature reserve are also to be provided under this plan of management, including the investigation of a walking track down to Shelly Beach. Old informal walking tracks through the centre of the reserve will be revegetated and the weed control program within the reserve will be continued and expanded.

This plan of management establishes the scheme of operations for Sea Acres Nature Reserves. In accordance with the provisions of Section 75 of the National Parks and Wildlife Act, 1974, this plan of management is hereby adopted.

PAM ALLAN, M.P.

Minister for the Environment

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1. INTRODUCTION

The National Parks and Wildlife Act, 1974, requires that a plan of management be prepared for each nature reserve. A plan of management is a legal document that outlines how the area will be managed in the years ahead.

The procedures for the adoption of a plan of management for a nature reserve are specified in the Act:

- * Where a plan of management has been prepared, the Director-General is required to refer the plan to the National Parks and Wildlife Advisory Council for its consideration and advice.
- * The Director-General is required to submit the plan to the Minister, together with any comments or suggestions of the Advisory Council.
- * The Minister may adopt the plan with or without alteration, or may refer it back to the Director-General and Advisory Council for further consideration.

Once a plan has been adopted by the Minister, no operations may be undertaken within the nature reserve except in accordance with the plan.

Although not a requirement under the Act, this plan of management was placed on public exhibition from 11th March until 20th June 1994. All comments received were referred, together with the exhibited plan, to the National Parks and Wildlife Advisory Council for their consideration and advice to the Minister.

The planning process leading to the development of this plan has involved the collection and use of information, which for reasons of document size, has not been included in the plan. For additional information or enquiries on any aspect of the plan, contact the Service's Port Macquarie District Office at "Roto", Macquarie Nature Reserve, Everard St, Port Macquarie or by phone on (065) 83 5518.

Copies of all representations received will be available for public inspection for 3 months following the adoption of this plan in the library of the Service's Head Office at 43 Bridge Street, HURSTVILLE 2220 (telephone: 02 585 6444).

2. MANAGEMENT CONTEXT

2.1 NATURE RESERVES IN NEW SOUTH WALES

Reserving areas for nature conservation as a general purpose was introduced into Australia with the establishment of Royal National Park in 1879, some seven years after the world's first national park was created at Yellowstone in the United States of America.

Fauna reserves in New South Wales were first established under the Fauna Protection Act of 1948, which was replaced by the National Parks and Wildlife Act of 1967. Under the latter Act, fauna reserves were reclassified as nature reserves. The 1967 Act has been replaced by the National Parks and Wildlife Act, 1974.

Under the National Parks and Wildlife Act, nature reserves are areas of special scientific interest containing wildlife or natural environments or natural phenomena.

The purposes of nature reserves are defined in the Act as:

- (a) the care, propagation, preservation and conservation of wildlife;
- (b) the care, preservation and conservation of natural environments and natural phenomena;
- (c) the study of wildlife, natural environments and natural phenomena; and
- (d) the promotion of the appreciation and enjoyment of wildlife, natural environments and natural phenomena.

Nature reserves are valuable refuge areas, where natural processes, phenomena and wildlife can be studied. They differ from national parks which include as a major objective the provision of appropriate recreation opportunities.

2.2 SEA ACRES NATURE RESERVE

2.2.1 Location and Dedication

Sea Acres Nature Reserve is located on the mid north coast of New South Wales, approximately 400 km north of Sydney. It covers an area of approximately 76 hectares within the town of Port Macquarie. The reserve is bounded by the Pacific Ocean to the east, Shelly Beach to the north, Tacking Point lighthouse to the south, and sealed roads which provide a buffer from the surrounding residential development on the western and south-western sides.

The nature reserve was dedicated on 11th March, 1987 over part of a Reserve for the Preservation of Native Flora notified in 1913. Prior to dedication as a nature reserve approximately 30 hectares of the reserve was operated under a Special Lease from the then Department of Lands as a private tourist attraction called "Sea Acres Wildlife Sanctuary".

2.2.2 Importance of Sea Acres Nature Reserve

The primary purpose for dedication of Sea Acres Nature Reserve was to preserve an area containing significant geological features and an outstanding remnant of coastal littoral rainforest for an area so far south.

Sea Acres Nature Reserve has significant conservation value at both the state and national level. Its value was first recognised in 1913 when it was reserved by the Crown as part of Shelly Beach Flora Reserve, and in 1969 a larger area than presently dedicated as nature reserve was recommended for permanent reservation by the Scientific Committee on Parks and Reserves because of its important scientific and educational value.

Passing through the reserve is a narrow fault which stretches north-south along this section of the coast. The fault delineates two distinct vegetation types. To the east the underlying ultrabasic intrusive serpentine rock has weathered to a deep red loam supporting rainforest, while to the west the older palaeozoic rocks have produced a paler less fertile soil rich in quartz which supports an open eucalypt forest. The red loam soils are unusual on the N.S.W. coast so close to the sea. The only other examples are on the cleared headlands of Lennox and Tweed Heads where rainforest was also previously found.

The landscape and geological values of Sea Acres Nature Reserve have been recognised by the National Trust of Australia, the Geological Society of Australia and the Australian Heritage Commission.

Features of importance identified by the Geological Society of Australia are:

- i) one of the few complete "ophiolite suites" within eastern Australia. The ophiolites, which are extensively altered, are associated with geosynclinal sediments and is of great importance to the interpretation of the geological evolution of the region as it relates to plate tectonics;
- ii) the only occurrence of "glaucophane-lawsonite" rocks, known as "blueschists", so far documented in Australia; and
- iii) examples of metallic mineralisation and "pillow lavas", which are prominent in the general area. Pillow lavas have a distorted globular form from having been extruded under water.

Sea Acres Nature Reserve protects a remnant of the original native plant and animal communities once found along much of the mid north coast of NSW. It contains three vegetation types of which the rainforest, or closed forest community, is the dominant and most significant component. The rainforest covers a significant area of the reserve and its species diversity is nearly double that of other coastal rainforest sites surveyed in the area, with 172 species having been recorded. The only other areas of littoral rainforest of comparable size and diversity within NSW are found on the far north coast.

Five rainforest species reach their southern limit of distribution in the reserve. These are the coast cottonwood (*Hibiscus tilaceus*), golden ash (*Hodgkinsonia ovatiflora*), blunt-leaved native wisteria (*Millettia australis*), fairy's slipper orchid (*Peristeranthus hillii*) and flat fork fern (*Psilotum complanatum*). Necklace pod (*Sophora tomentosa*) is also found at its southern limit within the reserve.

Sea Acres Nature Reserve provides essential habitat and breeding sites for a number of animal species, most of which do not always remain within the reserve boundaries. The reserve is therefore important not only in its own right but also as one protected

area within a system or mosaic of natural and semi-natural lands of importance to wildlife.

Four species recorded in the reserve are presently on the endangered fauna list (Schedule 12 of the National Parks and Wildlife Act). These are the koala (*Phascolarctos cinereus*), rose-crowned fruit-dove (*Ptilinopus regina*), wompoo fruit-dove (*Ptilinopus magnificus*) and glossy black cockatoo (*Calyptorhynchus lathamii*).

The location of Sea Acres Nature Reserve within a high growth centre and popular tourist destination, and its proximity to other rainforest areas including those of World Heritage status, led to its being chosen as one of three rainforest education centres run by the National Parks and Wildlife Service in NSW, the others being at Dorrigo and at Minnamurra Falls. In recognition of this role, development of the "Rainforest Centre" building complex and associated 1.25 km boardwalk were undertaken by the Service in the late 1980s under a joint Federal and State Government funding scheme known as the National Rainforest Conservation Programme.

The importance of Sea Acres Nature Reserve can be summarised as:

- * The area was included in the National Trust of Australia's first coastal landscape to be classified in the Register of the National Estate in 1983.
- * The reserve falls within an area identified as being of special scientific significance by the Geological Society of Australia.
- * The Sea Acres geological suite has been classified as a "Category III" site by the Australian Heritage Commission. Category III sites are selected for their educational as well as scientific importance, and are of interest to the general public as well as to student and geological groups.
- * The reserve contains one of the largest and least modified remnants of littoral rainforest in New South Wales.
- * The Sea Acres rainforest is of special importance being a sample of maximum development and diversity of littoral rainforest possible at this latitude. Its species diversity is nearly double other coastal rainforest sites on the mid north coast of N.S.W.
- * The rainforest is identified under State Environment Planning Policy No. 26 - Littoral Rainforest.
- * Five species of sub-tropical rainforest plants reach their southern limit of distribution in the reserve.
- * The reserve provides habitat for a large number of wildlife species given its small area. It is an important part of the broader nature conservation system within the Port Macquarie area.
- * It is an important koala corridor, identified in the Management Plan for Koalas in the Hastings Municipality as crucial to the movement of koalas between Lake Innes and Port Macquarie township.
- * The Rainforest Centre plays an important public educational role as well as being a field study centre.

3. OBJECTIVES OF MANAGEMENT

3.1 GENERAL OBJECTIVES FOR NATURE RESERVES

The following general objectives relate to the management of nature reserves in New South Wales:

- * the protection and preservation of scenic and natural features;
- * the maintenance of natural processes as far as is possible;
- * the conservation of wildlife;
- * the preservation of Aboriginal sites and historic features; and
- * the encouragement of scientific and educational enquiry into environmental features and processes.

3.2 SPECIFIC OBJECTIVES FOR SEA ACRES NATURE RESERVE

In addition to the above objectives, the following specific objectives apply to the management of Sea Acres Nature Reserve:

- * to protect and interpret the rainforest, other plant communities and the habitat values of the reserve;
- * to promote an understanding and appreciation of natural heritage conservation generally, and in particular an understanding and appreciation of rainforests and rainforest conservation;
- * to manage the reserve as part of a system of lands which together protect the natural heritage and scenic amenity of the mid north coast of NSW;
- * to facilitate the scientific study within the reserve;
- * to provide a specialised tourist/visitor experience which complements other tourist attractions currently available in the Port Macquarie area; and
- * to provide for low-key recreational use of the coastal edge of the reserve.

3.3 OVERALL STRATEGY

Sea Acres Nature Reserve has been developed as a major rainforest environmental education centre, and it will continue be managed to provide opportunities for visitors to see and understand the rainforest and provide a general understanding and appreciation of natural heritage conservation.

4. POLICIES AND FRAMEWORK FOR MANAGEMENT

This chapter contains the policies and framework for the management of the Sea Acres Nature Reserve together with relevant background information. Policies are summarised under the following section headings:

- 4.1 NATURAL RESOURCES
- 4.2 CULTURAL RESOURCES
- 4.3 USE OF THE AREA

The policies established in this plan of management will provide the framework for management consistent with anticipated resources available to the Service and with anticipated community trends for the next five to ten years. The actions identified are those immediate proposals which are to be undertaken in the next five years. Other management actions may be developed over the life span of this plan consistent with the policies set out in the plan.

4.1 NATURAL RESOURCES

4.1.1 Geology and Geomorphology

Sea Acres Nature Reserve comprises a narrow coastal strip behind Shelly Beach which rises steeply to the road. To the south a wider strip takes in the seaward slope above Miners Beach and several small headlands. In its deeper mid section the area encompasses a central valley, together with some upper slopes and ridge lines. To the west, Pacific Drive and Lighthouse Road separate the reserve from the urban environs of Port Macquarie along the main catchment ridge.

The nature reserve includes a number of features of geological interest to students and visitors alike. The area consists of a narrow fault bounded block containing a series of rocks including basalt lavas and breccia, schists, gabbros, and dolorites, all of which have been highly deformed and altered during formation. Ribbon-cherts and jasper are frequently interbedded with the basalts. The ribbon-cherts are well exposed at Miners Beach as are rare examples of pillow lavas and sheeted basic dykes. Examples of metallic mineralisation, including lenses of magnetite-pyrite and manganese silicate are also exposed at Miners Beach.

The geology of Sea Acres Nature Reserve is of special scientific significance. Sea Acres was selected by the Australian Heritage Commission as a "Category III" site because as well as having scientific importance it is of interest to the general public.

A small perennial creek flows north through the reserve to the Pacific Ocean at Shelly Beach. The creek forms a protected valley within the reserve. Its main source of water is a spring located within the reserve.

Policies

- * The geology of the reserve and its effect on vegetation patterns will be explained to visitors.
- * The catchment of the main creek within the reserve will be protected from pollution.
- * Soil erosion will be controlled.
- * Fossicking will not be permitted on the reserve.

- * Research into the geology and geomorphic processes of the reserve will be encouraged.

Action

- * Sites of geological importance for both education and protection will be located and selected sites will be interpreted to visitors to the reserve.

4.1.2 Native and Introduced Plants

Three floristic types of rainforest have been classified within the reserve. The greatest species diversity and development occurs in the sub-tropical rainforest along the creek and protected slopes and moist easterly aspect of the valley. Typical species are the bangalow palm (*Archontophoenix cunninghamiana*), giant water gum (*Syzygium francisii*), native tamarind (*Diploglottis australis*), yellow carabeen (*Sloanea woolsii*) and many laurel and myrtle species. Research is presently being undertaken on the reserve to determine the age of the bangalow palms.

Littoral rainforest with typically salt-tolerant species, stunted forest height and wind-sheared crowns is found on the exposed seaward slopes. Species diversity on these exposed slopes is relatively low, with only 50 species being recorded. The more common species are gap axe (*Arytera divaricata*), tuckeroo (*Cupaniopsis anacardioides*), red olive berry (*Elaeodendron australe*), yellow tulip (*Drypetes australasica*), large mock olive (*Notelaea longifolia*) and flintwood (*Scolopia braunii*).

A dry rainforest association with greater species diversity is found on the western aspect of the coastal ridge between the beach and the creek. Gap axe (*Arytera divaricata*) and black apple (*Planchonella australis*) are the most common species.

The remainder of the reserve includes sites of open coastal heath on the exposed seaward slopes with open sclerophyll forest on the western upper slopes and ridges. The heath vegetation is dominated by coast banksia (*Banksia integrifolia*) with stands of screw palm (*Pandanus pedunculata*) and horsetail she-oak (*Casuarina equisetifolia*) jutting from steep locations along the coastal scarp. The open forest is characterised by coastal blackbutt (*Eucalyptus pilularis*), tallowood (*E. microcorys*), flooded gum (*E. grandis*) and the red and pink bloodwoods (*E. gummifera* and *E. intermedia*). Necklace pod (*Sophora tomentosa*) which is uncommon on the NSW north coast is found at its southern limit within the reserve.

Dieback of the native vegetation has occurred in some parts of the reserve. The main area of dieback is adjacent to the Shelly Beach carpark and was caused by clearing and subsequent salt scald of previously protected trees and shrubs, however dieback occurs along the whole coastal fringe of the reserve.

Weeds and other non-native plants are found mainly along roads and walking tracks, on headlands and seaward slopes, and where dieback has occurred. Weed infestation is exacerbated by the dumping of garden refuse, especially along the western boundary of the reserve, and by burning of the native vegetation. Species include lantana (*Lantana camara*), morning glory (*Convolvulus arvensis*) and bitou bush (*Chrysanthemoides monilifera* ssp. *rotunda*). Bitou bush poses the most serious threat to the area with some sites on the seaward slopes completely smothered and devoid of native vegetation. To protect the reserve from bitou bush, the bitou tip moth (*Comostolopsis germana*) was released on an area of Crown land adjoining the reserve. This was the first successful introduction in Australia of a biological control for bitou bush and the moth has since spread to attack the bitou bush fringing Miners Beach. Hand clearing and spraying are also undertaken to control weeds.

Fire did not commonly occur in the reserve in the past due to its isolation from larger areas of fire-prone plant communities and its road boundaries, however recently arson has become a major problem. It poses a potential threat to the reserve's vegetation, and particularly the rainforest which has little natural resistance and could be destroyed by fire. Fire can also open areas to weed invasion.

Policies

- * Native plant communities will be protected and regeneration of disturbed and dieback areas promoted.
- * Weeds will be controlled and where possible eliminated.
- * Research into the vegetation of the reserve and into biological control of weed species will be encouraged.
- * Fire will be excluded from the nature reserve. Unscheduled fires will be suppressed and no prescribed burning will be undertaken on the reserve.

Actions

- * A weed control plan will be prepared for the reserve. Priority will be given to the elimination of introduced species from around the Rainforest Centre, removal of bitou bush from around clumps of necklace pod (*Sophora tomentosa*), removal of morning glory and, where practical, control of the spread of bitou bush and lantana.
- * A program will be developed to arrest dieback near Shelly Beach through appropriate plantings.
- * A program will be developed to encourage neighbours to properly dispose of rubbish and garden refuse.
- * Liaison will be maintained with Hastings Council and other relevant authorities to monitor the impact of stormwater run-off into the nature reserve, with the aim of ensuring that such impact is minimised or eliminated.
- * A fire management plan will be prepared for the reserve.

4.1.3 Native and Introduced Animals

The nature reserve provides valuable habitat for a diversity of wildlife. Twenty one mammal species, over 100 species of birds, 17 species of reptiles, 6 frogs and numerous invertebrates including a rare freshwater snail (*Fluvidona* sp.) known only from this location have been recorded to date. Four species found in the reserve are presently on the endangered fauna list. These are the koala (*Phascolarctos cinereus*), rose-crowned fruit-dove (*Ptilinopus regina*), wompoo fruit-dove (*Ptilinopus magnificus*) and glossy black cockatoo (*Calyptorhynchus lathami*). A number of limited fauna surveys have been undertaken in the nature reserve and additional surveys are planned in the near future (1995). To date, however, there has been no full survey of the native animals of Sea Acres Nature Reserve.

The reserve is identified in the *Management Plan for Koalas in the Hastings Municipality* as an important movement corridor and habitat for koalas in the Port Macquarie area. It contains groves of favoured food trees and is one of the largest naturally-vegetated areas remaining in the town.

Other mammals found in the reserve include the red-necked wallaby (*Macropus rufogriseus*), swamp wallaby (*Wallabia bicolor*), grey-headed flying fox (*Pteropus poliocephalus*) and three species of microbats. Although not recently sighted on the reserve, the tiger quoll (*Dasyurus maculatus*) may also still be present as one was found killed on the road beside the reserve in 1985.

The rainforest provides a significant seasonal food supply for both migratory and sedentary fruit-eating birds. The rose-crowned fruit-dove has been recorded breeding in the reserve, and a number of favoured food tree species of the topknot pigeon occur. These are towards the southern limit of their range and hence ripen considerably later and help bridge the seasonable availability of food supply to the north.

The brush turkey is one of the most visible birds in the reserve, with some 35 individuals now recorded. An on-going research project on the brush turkey on the reserve began in 1984. It is providing information on their breeding cycles and behaviour.

In addition to the native animals, domestic and feral animals frequent the reserve. Dogs and foxes are responsible for disturbing the brush turkey and their mounds, and dogs also pose a threat to wallabies and koalas. Cats are a threat to small mammals and birds.

Policies

- * Monitoring and research into native animals, including continuation of the brush turkey study, will be encouraged.
- * Introduced animals will be controlled and where possible eliminated.

Actions

- * A full fauna survey for the reserve will be undertaken.
- * Interpretive information on the animals of the reserve will be prepared.
- * Visitor use of the reserve will be monitored to ensure minimal disturbance to local fauna is occurring.
- * A feral animal control plan for the reserve will be prepared.
- * A program will be developed to encourage neighbours to prevent domestic animals from entering the reserve.

4.2 CULTURAL RESOURCES

Sea Acres Nature Reserve contains evidence of both Aboriginal and European occupation, however no systematic surveys have been undertaken on the reserve to establish the extent of these resources.

Aboriginal occupation of the Port Macquarie area is well documented, with many famous photographs from the Thomas Dick collection being taken along the beaches and estuary of the lower Hastings River. Although no Aboriginal sites have been recorded within the nature reserve boundary, and only one artifact (an axe head) discovered on the reserve, it is likely that Aborigines used the area for hunting and the gathering of fruits and seeds. Other evidence of Aboriginal occupation may therefore exist on the reserve.

Quarrying, gold mining, mineral exploration and selective logging have all occurred on the reserve but apart from an old quarry little evidence of these activities remains. An old dirt road, called the Tuppy Road, once bisected the reserve from north to south but it is now so overgrown that it remains obvious only in a few places. No physical evidence of the road construction is visible.

European recognition of the natural and aesthetic values of the area dates back to 1913 when Sea Acres and Shelly Beach were dedicated as a Reserve for the Preservation of Native Flora under the Crown Lands Consolidation Act. In 1966 approximately 30 hectares of the reserve was let for a tourist attraction called "Sea Acres Wildlife Sanctuary" under a Special Lease from the Department of Lands. A Wildlife Refuge under the Fauna Protection Act was also proclaimed over the leased area at that time. Sea Acres Nature Reserve was dedicated in 1987 and the facilities associated with the lease were replaced by the Rainforest Centre and boardwalk which were opened in 1989.

Policies

- * Inventory and research into Aboriginal occupation and use of the reserve will be encouraged.
- * The Birpai Aboriginal Land Council will be consulted regarding the management of any Aboriginal sites or other items found on the reserve.
- * The importance and role of the rainforest in the traditional lifestyle of the Aboriginal people of the area will be interpreted to visitors to the reserve.
- * The values and benefits of rainforests in the cultural and economic lifestyle of contemporary society will be interpreted to visitors.

Actions

- * A history of occupation and use of the area prior to dedication of the nature reserve will be compiled.
- * The Aboriginal and European history of the reserve and the benefits of rainforests to these societies will be included in the Rainforest Centre's educational information.

4.3 USE OF THE AREA

It is an important aspect of the management of this area to ensure that its use - whether by the general public, special interest groups, Service managers or other authorities - is appropriate, i.e. in conformity with the management objectives and management strategy of this plan.

The major categories of use that can be appropriate, to varying degrees, on Service areas are:

- education and promotion of the area, the Service and the conservation of natural and cultural resources;
- certain types of recreation;
- scientific research; and
- management operations, by the Service itself and other authorities with responsibilities in the area.

The extent to which these categories of use are appropriate to Sea Acres Nature Reserve is indicated in the following sections.

4.3.1 Environmental Education and Promotion

Since dedication, the focal point of Sea Acres Nature Reserve has been the Rainforest Centre and associated boardwalk. The centre and boardwalk were opened in 1989 as an educational facility to promote community support for nature conservation, and in particular rainforest conservation. They are presently operated by a concessionaire under a lease from the National Parks and Wildlife Service. Refreshments, souvenirs, etc. are on sale at the centre and it is used for meetings, conferences and educational classes as well as providing general interpretive information. An education officer has been employed by the Service to develop teaching resources. The education officer also assists school groups who use the reserve for environmental education, while volunteers from the local community act as guides along the boardwalk. The volunteer guides play an important role in explaining the features of the reserve to visitors.

Part of the original proposal for the Rainforest Centre was to construct a lookout with views over the rainforest canopy and out to sea and provide shelters over the rest bays as protection during wet weather. Neither was constructed at the time due to lack of funds but it is still considered that views over the canopy and additional shelter will improve the visitor experience. Subject to a satisfactory environmental assessment and cost/benefit analysis, the board walk will be extended by approximately 300 metres to an old quarry where a platform will be constructed to provide visitors with views over the forest canopy and to the ocean.

Policies

- * The Rainforest Centre will facilitate the study of and research into the rainforest on the reserve and promote a general understanding and appreciation of rainforests and rainforest conservation.
- * The centre will provide educational opportunities and interpretation facilities pertaining to the reserve and promoting its conservation.
- * Pedestrian access will be restricted to designated paths and walkways except for approved educational or scientific programs.
- * Volunteer guides will continue to be encouraged to participate in providing educational services to visitors to the reserve.

Actions

- * Interpretive information within the Rainforest Centre and along the boardwalk will be updated.
- * Teaching resources will be prepared by qualified staff in consultation with the Service and the lessee.
- * A visitor monitoring program will be developed. Surveys of visitors will be undertaken to monitor visitor use patterns and preferences.
- * Shelters will be progressively constructed over the rest bays on the boardwalk.
- * Subject to satisfactory environmental assessment and cost/benefit analysis, the board walk will be extended by approximately 300 metres to an old quarry where a platform accessible by steps will be constructed to provide visitors with views over the forest canopy and to the ocean.

4.3.2 Recreation Opportunities

Sea Acres Nature Reserve provides opportunities for low key, day use recreation. The reserve boundary follows a relatively undisturbed section of coastline of high scenic value containing a number of small secluded rocky coves and sandy beaches which provide opportunities for fishing, swimming and sunbathing. Picnic facilities are available on Council land adjoining the reserve at Shelly Beach and there are 2 picnic tables in the Rainforest Centre carpark.

In addition to the boardwalk, walking tracks provide access to the beaches and headlands of the reserve as well as a further opportunity to experience the rainforest. One walking track (approximately 600 metres long) connects Shelly beach to Miners Beach and another (length about 800 metres) connects Lighthouse Road to Miners Beach. These coastal tracks, when joined by the length of Miners Beach, form part of a proposal by Port Macquarie Municipal Council for an extended walk from Town Beach to Tacking Point. The walking track system is shown on the map.

The road to Shelly Beach is also used as a walking track and conflict occurs between vehicles and pedestrians using the road. The feasibility of constructing a separate walking track along the edge of the Shelly Beach road will be investigated.

Two other tracks, which also connect Lighthouse Road to Miners Beach, bisect the core of the reserve. One follows part of the route of the old Tuppenny Road while the other, called the Castaways track, was constructed in the 1960s for an Australian film epic of that name. Both are severely eroded and have resulted in weed invasion. Although they provide a "short-cut" to Miners Beach for local residents, it is proposed that both these tracks be revegetated.

Parking is available at Shelly Beach and off Lighthouse Road where the coastal walking track begins. The area used for parking at the start of the walking track is to be formalised and bollards erected to prevent further damage to the surrounding vegetation. All other parking bays along the Lighthouse Road edge of the reserve will be closed and revegetated.

Policies

- * The coastal walking track, boardwalk and carparks shown on the map will be maintained. All other tracks and parking areas will be closed and rehabilitated.
- * Natural features along the walking track system will be interpreted to visitors.
- * No fires or camping will be permitted in the reserve.
- * Additional picnic tables may be provided in the vicinity of the Rainforest Centre carpark.

Actions

- * The Castaways Track, Tuppenny Road route and any other unauthorised tracks and associated parking bays on Lighthouse Road will be closed and revegetated.
- * Signs will be erected on Lighthouse Road and Miners Beach to direct pedestrians to the new coastal walking track.
- * Bollards will be placed around the edge of the carpark at the lighthouse end of the coastal walking track, and the carpark surfaced with gravel.

- * The feasibility of constructing a separate walking track along the edge of the Shelly Beach road will be investigated

4.3.3 Scientific Research

Sea Acres Nature Reserve is an important scientific research resource and the area has a number of current research programs. These include research into the breeding and behaviour of brush turkeys and research to establish the age of the bangalow palms on the reserve.

The need for additional research into the resources of the reserve and park management issues has been identified in a number of sections of this plan. In particular, research into the geology and geomorphic processes, native plants and animals, biological control of weed species, the impact of people on native animals, past Aboriginal use and occupation of the reserve and visitor use patterns and preferences have been identified.

Policies

- * Research will be encouraged into the resources of the reserve, methods to protect its resources and use of the area.
- * Priority will be given to existing research programs and research into areas identified in this plan as requiring investigation.

Action

- * A prospectus will be prepared as a guide to preferred research projects in the park, with emphasis on those projects with a direct relevance to its management

4.3.4 Management Operations

There are a number of facilities on the reserve associated with the Rainforest Centre which are presently managed by the lessee of the centre. These include a cafe/restaurant, shop, interpretive display, theatre, classroom, carparking area and a small workshop as well as the boardwalk and a short management track leading onto the boardwalk. In addition there is a house on the reserve that is subject to a life tenancy.

Policies

- * The Rainforest Centre, boardwalk and associated facilities will continue to be maintained, and managed to provide opportunities for visitors to see and understand the reserve.
- * The present occupier and his wife will continue to have life tenancy of the house on the reserve. Following the return of the house to the Service it will be used for a purpose associated with management or operation of Sea Acres Nature Reserve.

5. PLAN IMPLEMENTATION

This plan of management is part of a system of management developed by the National Parks and Wildlife Service. The system includes the National Parks and Wildlife Act, management policies, established conservation and recreation philosophies, and strategic planning at corporate, regional and district levels.

The orderly implementation of this plan will be undertaken within the annual programmes of the Service's Port Macquarie District. Priorities, determined in the context of district and regional strategic planning, will be subject to the availability of necessary staff and funds and to any special requirements of the Director or Minister.

District programmes are subject to ongoing review, within which works and other activities carried out at Sea Acres Nature Reserve are evaluated in relation to the objectives laid out in this plan.

The environmental impact of all development proposals will continue to be assessed at all stages of the development and any necessary investigations undertaken in accordance with established environmental assessment procedures.

Section 81 of the Act requires that this plan shall be carried out and given effect to, and that no operations shall be undertaken in relation to the nature reserve unless they are in accordance with the plan. However, if after adequate investigation, operations not included in the plan are found to be justified, this plan may be amended in accordance with section 76(6) of the Act.

As a guide to the orderly implementation of this plan, relative priorities for identified activities are summarised below:

Activity	reference (in plan)
HIGH PRIORITY	
Remove weeds and rehabilitate dieback area near Shelly Beach	4.1.2
Prepare weed control plan	4.1.2
Monitor stormwater	4.1.2
Institute neighbour education program regarding weeds and domestic animals	4.1.2, 4.1.3
Update educational and interpretive display in rainforest centre and along boardwalk	4.3.1
Establish visitor monitoring program	4.3.1

Activity	reference (in plan)
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MEDIUM PRIORITY

Identify any geological sites that need protection or interpretation	4.1.1
Prepare fire mangement plan	4.1.2
Undertake fauna survey	4.1.3
Prepare feral animal control plan	4.1.3
Compile history of use of the reserve and incorporate into interpretation program	4.1.3
Develop teachers kits	4.3.1
Provide lookout facility	4.3.1
Close and regenerate unwanted tracks, erect signs	4.3.2
Prepare research prospectus	4.3.3

LOW PRIORITY

Construct shelters over bays on boardwalk	4.3.1
Formalise carpark near lighthouse	4.3.2
Investigate walking track along Shelly Beach Road	4.3.2

SELECTED REFERENCES

- Department of Environment and Planning 1988, Littoral Rainforest - State Environmental Planning Policy No. 26.
- Dodkin, M.J. 1989, Sea Acres Nature Reserve Interim Management Guidelines (Internal report to the National Parks and Wildlife Service).
- Griffith, S.J. 1989, Management for the Conservation of Rare Plant Species of Sclerophyll Plant Communities on the New South Wales North Coast (Internal report to the National Parks and Wildlife Service).
- Harmer R. & L. 1986, Sea Acres Wildlife Refuge.
- Luscombe, S. 1988, Sea Acres Nature Reserve Interim Management Guidelines (Internal report to the National Parks and Wildlife Service).
- Mount King Ecological Surveys 1991, Management Plan for Koalas in Hastings Municipality, Draft report to Hastings Municipal Council.