

Management plan



Noosa National Park

South East Queensland Biogeographic Region

October 1999



QUEENSLAND
PARKS AND
WILDLIFE
SERVICE

Summary

This management plan provides the framework and guidelines on how Noosa National Park will be managed. It sets out the considerations, outcomes and strategies that are proposed to form the basis on which day-to-day management decisions are made.

This plan was prepared in September 1999 and, in accordance with the *Nature Conservation Act 1992*, will be reviewed not later than 10 years after its approval. For further information on this plan or the planning process, please contact the Queensland Parks and Wildlife Service in Brisbane on (07) 3202 0200 during business hours.

This management plan was prepared by Queensland Parks and Wildlife Service staff. Thanks are due to groups and individuals who made submissions in response to the draft plan.

For information on protected area management plans, the QPWS and EPA visit our web site www.env.qld.gov.au

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1 Introduction

A vision to conserve a near-continuous belt of natural coastal communities along the Sunshine Coast from Coolumb in the south to Noosa Heads in the north has been realised with the gazettal of Noosa National Park, an amalgamation of five separate national and environmental parks and a few linking areas.

Noosa National Park is a valuable natural asset that conserves a diversity of native plant and animal species and a wide array of natural communities. Its mosaic of distinct coastline landforms encompasses spectacular rocky headlands, high dunes, foredunes, hills and coastal sandplains supporting teatree swamp and wallum heaths. Remnant coastal lowland rainforests are found in moist gullies and on sheltered slopes. The heathlands of this coastal area provide impressive wildflower displays.

Noosa National Park's conservation significance will be increased by the addition of areas such as Emu Mountain and 19 hectares of land adjacent to Cooyar Street. These areas protect important habitat for a number of rare and threatened plants including *Allocasuarina emuina* and Christmas bells *Blandfordia grandiflora*.

Many of the landscapes and places that are protected by the park have been part of the creation stories of special importance to Aboriginal people.

The Sunshine Coast is a tourist destination for both Australian and international visitors. The area is one of south-east Queensland's major centres of economic, social and recreational activity. One of the principal attractions is Noosa Heads. Its impressive coastal views, rocky headlands, sandy shorelines and recreational opportunities draw more than one million visitors a year.

Noosa National Park's proximity to surrounding townships presents a valuable opportunity to display the intrinsic values of these natural coastal areas to the broader community and encourage a respect for and a desire to conserve the area in its natural state.

South-east Queensland's population is increasing rapidly, mainly along the coastal margin, resulting in the expansion of coastal towns and proposals for land development in an almost continuous strip from Noosa to the New South Wales border.

The encroachment on coastal native vegetation and the landscape by development on the Sunshine Coast highlights Noosa National Park's regional significance for protecting and conserving remaining coastal ecosystems and cultural heritage.

2 Management directions and purposes

Directions

Noosa National Park will be managed as a belt of largely undeveloped natural coastal communities in the otherwise mainly developed setting of the Sunshine Coast.

Visitors to Noosa National Park will experience a variety of opportunities, ranging from bushwalking through coastal rainforest, wallum heath, open forest and grasslands to family picnics, and observing animals and plants and the ocean life and processes. The park provides a peaceful and scenic backdrop for coastal activities such as swimming, surfing and fishing.

Environmentally sensitive recreational and interpretive facilities will be developed primarily in the northern Noosa Heads section. The southern sections of the park will remain in a relatively natural state. Opportunities and facilities for larger numbers of people and groups including commercial operations will be focused in the Noosa Heads area.

Visitors to the park will have the opportunity to appreciate the diverse nature of coastal vegetation communities, their resident native animals, their geological features and their cultural associations through the use of interpretation.

Purposes

The major purposes of management will be to ensure that:

Conservation

- The natural vegetation and geological formations are protected and continuous habitat is conserved where possible.
- Sensitive habitats and threatened species are monitored and their requirements are reflected in management programs.
- Sites of special significance are managed in consultation with local communities including representatives of Aboriginal groups and local historical societies.
- Appropriate fire management regimes protect plant and animal communities from the adverse effects of wildfires.
- Pest plant and animal control action plans are developed with assistance and support from local communities.
- Specific research and monitoring programs in relation to vegetation and native animals are initiated.
- A system of management zones meets conservation, cultural heritage and recreation objectives.

Recreation and tourism

- A range of nature-based recreation opportunities is provided to complement recreation opportunities in surrounding national parks, council parks and private reserves.
- Environmentally sensitive interpretive and day-use recreation facilities are provided.
- Public access is mostly for pedestrians, except at the Noosa Heads carpark and Viewland Drive.
- Community awareness and appreciation of the region's natural coastal communities are raised to foster support for their protection.

Community involvement

- Neighbours are aware of the impact of residential development on the park environment and the necessity for fire management, feral animal management and weed control programs.
- Opportunities are provided for Aboriginal people, local interest groups and residents to be consulted about and involved in management of the park.

3 Basis for management

3.1 Location and planning area

Noosa National Park is situated on the Sunshine Coast about 150 kilometres north of Brisbane. The park was gazetted in 1994 under the *Nature Conservation Act 1992* to amalgamate five previously separate national and environmental parks stretching from Coolool to Noosa. Additional small areas have been added since 1994 to increase the size of the park to 2280 hectares. Map 1 shows the sections which make up Noosa National Park.

3.2 Regional context

South-east Queensland's Sunshine Coast is part of an ecosystem of coastal lowlands which forms a natural region extending from Gladstone to Coffs Harbour in New South Wales (Coaldrake 1961). The Sunshine Coast has strong links to the adjacent Great Sandy Region in terms of geology, landscape components, climate, soils and vegetation. Ocean landscapes, diverse coastal vegetation and native animals, a range of water- and land-based activities and sporting opportunities make the Noosa area and Great Sandy Region important tourist destinations.

The Sunshine Coast is one of the fastest growing areas in south-east Queensland. Land is being developed for residential and commercial use and associated transport infrastructure. Without Noosa National Park, the Sunshine Coast's intrinsic appeal would be diminished.

3.3 Land tenure

Noosa National Park is held and managed by the State of Queensland under the control of the Queensland Parks and Wildlife Service. The park lies in the local government areas of Maroochy and Noosa. Adjacent to the park are the Lake Weyba Fish Habitat Reserve, unallocated State land, leasehold and freehold land and townships. The urban centres of Noosaville, Noosa Heads, Sunshine Beach, Peregian Beach and Coolumb are located around the park complex.

The Department of Primary Industries, Fisheries and Forestry is responsible for the day-to-day management of the marine areas, while the local governments are responsible for the intertidal areas between high water mark and low water mark.

3.4 Management obligations

Planning and management decisions must take into account relevant legislation, the needs of other government agencies with statutory duties, permits and agreements, and the influence of surrounding landuse.

Legislation

The *Native Title Act 1993* provides for the recognition and protection of native title. The plan does not intend to affect, diminish or extinguish any native title rights. Work programs and management activities will consider the requirements of native title legislation to ensure native title rights are not compromised. In relation to Noosa National Park, any Native Title Representative Bodies in the area and native title claimants must be notified of the preparation of a management plan, the development of a fire management plan and, where possible, the undertaking of any prescribed burning.

The management of Noosa National Park will be in accordance with the *Nature Conservation Act 1992*.

Section 17 of the Act defines the management principles for national parks. The cardinal principle is to provide, to the greatest extent, for the permanent preservation of the area's natural condition and the protection of the area's cultural resources and values. The other principles are to present the area's cultural and natural resources and their values, and to ensure that the only use of the area is nature-based and ecologically sustainable.

Agreements

Australia has bilateral agreements with the governments of Japan and China to take on specified responsibilities of putting in place appropriate measures to preserve and enhance the environment of migratory birds. The Japan-Australia Migratory Bird Agreement (JAMBA) and the China-Australia Migratory Bird Agreement (CAMBA) cover the migratory birds listed in Appendix 2.

3.5 Values of Noosa National Park

Vegetation

The Sunshine Coast from Noosa to Coolool is characterised by a mosaic of distinctive coastal landforms including coastal plains, high dunes, headlands, foredunes, hills and a tidal lake, Lake Weyba (Batianoff 1987). The soils are low in nutrients and the vegetation types reflect changes in soil-water relationships. The various sections of the park conserve 20 distinct vegetation communities (more than 760 native plant species) which represent the range of communities described for the Sunshine Coast (QDEH 1993).

All of these communities have either local or regional significance and/or conserve species which are rare or threatened (see Appendix 1). The following vegetation communities are of particular conservation significance.

Closed forest

Coastal lowland warm subtropical rainforest growing on sand is conserved at Noosa Heads in patches along the western boundary and in sheltered gullies. This rainforest conserves the most southerly natural occurrence of the kauri pine *Agathis robusta* and several rare or threatened plant species - the orchid *Bulbophyllum globuliforme*, a grass *Arthraxon hispidus* and the rainforest trees *Cryptocarya foetida* and *Symplocos harroldii*. The only other significant areas conserving this rainforest type in the South East Queensland biogeographic region are at Coolool and Fraser Island. Because of the extremely limited distribution of this community and the small size of the remnant patches at Noosa, these areas should be given priority for protection.

***Eucalyptus racemosa* mid-high/tall open forest**

***Eucalyptus racemosa* mid-high/tall woodland**

These communities are represented on the Noosa Heads and West Weyba sections of the park. They have been extensively cleared south of Noosa and are of conservation concern.

***Melaleuca quinquenervia* mid-high/tall open forest**

***Melaleuca quinquenervia* mid-high/tall woodland**

These communities occur in patches throughout Noosa National Park where they provide protection for the endangered *Phaius* orchids. On the southern mainland many of these communities have been extensively cleared for coastal development. Samples present in the park represent a significant percentage of remaining Sunshine Coast communities.

***Callitris* mid-high/tall open forest**

Areas of *Callitris* open forest occur on the East Weyba section and Noosa Heads. This community is vulnerable south of Noosa because of clearing for residential development. It is very sensitive to fire and therefore requires special management considerations.

***Banksia integrifolia*/*Casuarina equisetifolia* low/mid-high open forest/woodland**

These foredune/beach ridge communities play a fundamental role in foredune and headland stability. They are the most restricted of all coastal lowland habitats, with significant areas remaining only on Moreton and Bribie Islands in south-east Queensland (McDonald and Elsol 1984).

Open/closed heath (high dunes)

Small patches of high dune heath (*Banksia aemula* low closed heath and *Banksia aemula* low closed heath with *Allocasuarina littoralis* emergents) occur on the crests and exposed slopes of the oldest, largest Pleistocene dunes in East Weyba and at the southern end of Noosa Heads. It has been extensively cleared for urban development and is considered to be endangered.

Closed heath

Closed heath/sedgeland

Closed heath and sedgelands have high conservation value as they provide one of the few remaining coastal areas supporting a population of the vulnerable ground parrot *Pezoporus wallicus*. After the Cooloola area, the wallum heath of the Noosa and Coolool regions is the next most important (in size and diversity) of this plant community remaining on the Sunshine Coast (Batianoff and Elsol 1989; McFarland 1989). South of Noosa these regional ecosystems are considered to be endangered.

Open heath (rocky hills)

This community occurs on Cainozoic igneous rocks especially rhyolite at Emu Mountain and the rocky knoll on the West Weyba section. The community on Emu Mountain contains several plant species restricted to these rocky habitats (QDEH 1994).

Native animals

The park supports a great diversity of vertebrate native animals including species of conservation significance (see Appendix 2). More than 181 bird species have been recorded in the park and adjacent intertidal areas. The Noosa Heads area provides habitat for 28 birds of conservation significance, including 20 migratory birds covered under agreements between Australia and Japan (JAMBA) and Australia and China (CAMBA).

Rare or threatened species recorded on the park (from *Nature Conservation [Wildlife] Regulation 1994*) include:

- the endangered red goshawk *Erythrotriorchis radiatus* which has been seen occasionally around Noosa Heads;
- the vulnerable ground parrot *Pezoporus wallicus* recorded from the Coolool section north to the Weyba Link section. This area currently provides the largest conserved suitable habitat south of the Noosa River. The ground parrot's distribution and abundance have declined due to the clearing of heathland for urban development;
- the vulnerable glossy-black cockatoo *Calyptorhynchus lathami* recorded from the East Weyba section. It has a patchy distribution from central Queensland to Victoria; and
- all four known acid frog species in the East Weyba section — the vulnerable wallum sedgefrog *Litoria olongburensis*, the vulnerable wallum rocketfrog *Litoria freycineti*, the vulnerable wallum froglet *Crinia tinnula* and the rare Cooloola sedgefrog *Litoria cooloolensis*.

The vulnerable Oxleyan pygmy perch *Nannoperca oxleyana* and honey blue-eye *Pseudomugil mellis* occur in Marcus Creek, part of which lies in the park.

Species of local conservation significance recorded on the park include:

- the koala *Phascolarctos cinereus* inhabiting Noosa Heads and its surrounds;
- a pair of visiting (possibly nesting) peregrine falcons *Falco peregrinus* which have been seen occasionally around Noosa Heads;
- the eastern grass owl *Tyto longimembris* recorded from the East Weyba section in the wet heath/sedgeland or rank grassland areas;
- a local population of eastern grey kangaroos *Macropus giganteus* inhabiting the eastern and southern park sections around Lake Weyba. They are not commonly found in such coastal areas close to urban settlement;
- the skink *Ctenotus arcanus* which has a patchy distribution in south-east Queensland and is unable to exist in urbanised areas (Catterall & Rishworth 1993); and
- the freshwater crayfish *Cherax* sp. recorded in the ephemeral streams and gullies of the coastal lowland rainforest at Noosa Heads.

Geology and landscape

Most of the park complex lies on either sandplains of Quaternary age (2 million years ago to present) or parabolic high dunes built up during the Pleistocene epoch (2 million to 10 000 years ago). Exceptions to these predominant geological forms include younger coastal beach sand ridges of Holocene age at the Peregian section and the Myrtle Creek sandstones of Triassic-Jurassic age (248-144 million years ago) which underlie the North Weyba section and parts of Noosa Heads itself (Batianoff & Elsol 1989).

Noosa Heads is the most geologically diverse section of the park, being formed mainly from Quaternary sand and sandstone with some igneous intrusions. The igneous intrusions are evident in the form of basaltic, granitic and andesitic dykes cutting through the sandstone. The intrusions and associated sandstone are more resistant to erosion and consequently have developed into rugged rocky points with sheltered beaches in between.

The West Weyba section of the park has an unusual, partially vegetated, rhyolitic, rocky knoll of volcanic origin present on the most westerly boundary.

Water catchment

Buffers of vegetation communities incorporating some areas of undisturbed vegetation on the park surround Lake Weyba and its catchment creeks. These communities provide partial protection of the lake edge from human impact, a corridor for wildlife and stability of the interface zone between land and water. They also partially protect water quality integrity which plays a significant part in the lake's normal functions and characteristics, particularly as a fish habitat reserve.

Cultural values

Aboriginal cultural heritage

A Native Title Claim has been lodged with the National Native Title Tribunal on behalf of the Undumbi people which covers Noosa National Park.

The Sunshine Coast, and Noosa in particular, has spiritual, cultural and historical significance for Aboriginal people. The area's many Aboriginal heritage sites include middens, campsites, scarred trees and bora rings. The area provided abundant food for the local Aboriginal community: fish, crustaceans, shellfish and molluscs from the Noosa River and associated lakes; turtles, dugong and fish from the ocean; and koalas, kangaroos, wallabies, emus, birds, goannas, possums and bandicoots supported by the diverse vegetation communities.

Undumbi laws, customs and aspirations are likely to result in identification of any additional set of important values for most value categories. This may include values such as story places linked to landscape features, culturally significant wildlife or interests in cultural education and tourism, and will be important in shaping the overall value and importance of the park.

Non-Aboriginal history

The remains of a large mechanical winch on the shore at Winch Cove (formerly called Machinery Bay) near Noosa Heads provide evidence of European settlement in the early twentieth century. The winch is thought either to have been used by early loggers to haul sawn hoop pines *Araucaria cunninghamii* to the shore for transport by ship to Brisbane or to have been salvaged from a foundering vessel.

During World War II (1939–45) trenches were dug on Noosa Hill as part of a series of fortifications for the Sunshine Coast. Slight dips and piles of stones can still be seen today. During this period, the military used the eastern side of Lake Weyba as a firing range (Windolf 1986). This land was later declared State Forest and some limited logging occurred.

The present park office and picnic ground used to be a forestry camp, which was the base for the management of the early park.

Recreation

The Sunshine Coast and its hinterland and the Cooloola region are recognised as a major recreational area for Brisbane and associated coastal regions. Noosa National Park's diversity of native plants and animals, high dunes, rocky headlands and lowland swamps and the tranquil setting of Lake Weyba attract visitors.

Visitors to Noosa National Park can enjoy bushwalking through coastal rainforest, heath and open forest, picnicking, birdwatching, photography and wildflower viewing. The national park also provides a tranquil backdrop to activities such as swimming, surfing, sunbaking and rockfishing.

Scenic viewpoints on the rocky headlands, knolls or high parabolic dunes provide excellent panoramic views of the Sunshine Coast and hinterland. The park's natural setting provides an attractive contrast to local urban development and emphasises to both residents and visitors the importance of continued conservation of natural habitats.

Interpretation

Significant opportunity for interpretation exists at Noosa National Park due to the high number of local, interstate and international visitors (Harris & Webster 1990). The park's natural and cultural resources include:

- a great diversity of plant communities within walking or short driving distance, especially at Noosa Heads;
- great diversity of birds and easily observed koalas;
- striking geological features; and
- rich Aboriginal heritage.

Other benefits of the high visitor numbers include the scope to address resource management issues such as the impacts of weeds and domestic animals and the opportunity to develop user-pays interpretive programs.

Education and research

The park provides an ideal natural resource for formal and informal education. Tertiary institutions, school groups, local residents and interest groups can use the park system to study the diversity of ecosystems within small areas and interactive components such as the geology and native plants and animals. Public appreciation of the area's natural values can be increased by reference to the conspicuous impacts of development on the coastal wallum and associated natural communities.

All aspects of the park environment, from the biological, geological and cultural components to the social and recreational components, present opportunities for research.

Tourism

As a major tourist destination, the park has significant economic value for the Sunshine Coast. Surrounding facilities such as holiday apartments and lodges, campgrounds, restaurants and kiosks gain economically from tourism.

4 Management strategies

This section of the management plan outlines the desired outcomes of planning, grouped under five broad headings:

- Natural resource management
- Cultural heritage management
- Recreation, tourism and visitor use
- Neighbourhood issues
- Park management

The delivery of the desired outcomes will be dependent on the resources available under the budget processes or external funds attracted.

4.1 Natural resource management

Conservation of native vegetation

Background information

The mosaic of vegetation communities found in the park has been mapped using aerial photographs and ground surveys (QDEH 1993). The distribution of these communities is determined mainly by the changes in soil-water relationships on the low-nutrient acidic sandy soils.

Maintaining the integrity and viability of these plant communities requires:

- the use of fire to approximate natural fire regimes, and
- removing the detrimental impacts responsible for changing the low nutrient-water balance and pH of the environment.

Fire is an integral part of vegetation community management. Many of the communities which occur within the park complex (i.e. sedgeland-grassland [wet heath], dry heath and high dune heath, low scrub and woodland and open eucalypt forest) have some dependency on fire for their continued existence and exhibit adaptations for survival in a fire-prone environment. Prescribed burns stimulate seed dispersal, aid germination and retain structural and floristic diversity within the communities. They also provide tree hollows which are habitat for native animals.

The pandanus *Pandanus tectorius* var. *pedunculatus* community in Noosa National Park has been experiencing dieback since 1993, especially in the Noosa Heads section between Teatree Bay and Alexandria Bay. A direct correlation exists between this dieback and the occurrence of an insect species, the flatid *Jamella australiae*. This dieback also occurs in the Gold Coast area. If allowed to go unchecked, it has the potential to spread along the entire coastline from Hervey Bay to New South Wales, and to Fraser Island and the Moreton Bay islands (Smith 1996).

Action has been taken by the Queensland Parks and Wildlife Service in conjunction with the Department of Primary Industries, Fisheries and Forestry (DPIFF) to control *Jamella* in the pandanus community. These actions include mapping the population, monitoring, release of wasps, stem injection, spot spraying of the pandanus crown and release of an information sheet prepared by DPIFF.

The coastal lowland heathland and sedgeland communities are particularly susceptible to the drainage of coastal plains for land development and the impact of roads which fragment these areas. The continued viability of these integrated, but individually identifiable, communities will rely on the maintenance of the low nutrient-water balance and the preservation of continued interactions between the different vegetation communities. Table 1 lists threats to the park plant communities.

Plant community	Impacts/issues
Coastal dune or strand vegetation (rocky headlands at Noosa, Peregian)	Prone to trampling and vehicle damage. Invasion by non-native plant species, especially bitou bush <i>Chrysanthemoides monillifera</i> , a serious weed of subtropical dunes.
Heath/sedgeland (Emu Swamp, Coolum, East Weyba, Weyba Link and Peregian sections)	Clearing and development on surrounding land for residential purposes isolating park areas from other remnant vegetation. Nutrient pollution causing colonisation by grasses, groundsel bush, ferns and bulrush <i>Typha</i> sp. and possible loss of native species intolerant of higher nutrient levels. Increased flammability of vegetation and fire intensity from colonisation by weeds leading to the elimination of native species or altered species composition. Increased pH levels of water and soils. Too frequent burning. Development of roads which fragment these communities.
<i>Melaleuca quinquenervia</i> open forest (Coolum, Emu Swamp sections)	Prone to fire and nutrient pollution, leading to invasion by non-native species. Altered drainage patterns from residential and road development.

Table 1. Threats to plant communities in Noosa National Park.

Desired outcome

- The biological diversity and integrity of the ecosystems and communities are conserved.

Proposed guidelines and actions

- Establish a scientifically based fire management plan for the park.
- Co-ordinate management of the dune systems at Noosa Heads and Peregian with the Beach Protection Authority. In particular, prevent further damage to dune vegetation and rehabilitate by fencing off fragile areas and upgrading access tracks using methods that can protect the natural environment and withstand the coastal climate.
- Liaise with local governments and the local community on the protection of remnant vegetation which links areas of conserved vegetation.
- Rehabilitate eroded areas and areas damaged by vehicles and set up monitoring sites to record change.
- Continue to liaise with Noosa Council and QPWS staff from Great Sandy to highlight concerns regarding the spread of *Jamella* through pandanus populations.
- Continue long-term monitoring of the population and spread of *Jamella* and the success of control agents.
- Seek to close roads which have become obsolete with the construction of the Sunshine Motorway to reduce the destructive impacts and fragmentation. Liaise with the Department of Transport on mitigating impacts of roads.
- Refer to sections on weed management, water quality management and park neighbours for strategies related to nutrient pollution.

Significant plant species management

Background information

In acquiring areas for national park on the Sunshine Coast, efforts have been made to conserve a representative sample of the diversity of vegetation communities and plant species present. A number of noteworthy plant species are conserved in the park areas (see Appendix 1). Species considered noteworthy are those which:

- are rare or threatened (endangered or vulnerable);
- are endemic;
- have a limited geographic distribution;
- are at one limit of their known distribution (e.g. southern limit); and
- live in susceptible or threatened communities.

The Recreation Reserve R1204 at Coolum is to be added to Noosa National Park. It secures the only stand of the endangered *Eucalyptus conglomerata* in the Coolum-Weyba area. The only other locally known stand of *E. conglomerata* occurs a few kilometres away in the Tewantin State Forest.

Approximately 70% of Emu Mountain is to be declared national park. Emu Mountain has high vegetation values for conservation and provides habitat for a variety of plant and animal species including the endangered *Allocasuarina emuina* and a number of other rare and threatened plant species not found elsewhere on the Sunshine Coast. It forms important biological links to the East Weyba section through the Coolum State High School site, and to the Coolum and Peregrine sections of the park (QDEH 1994).

Nineteen hectares of land adjacent to Cooyar Street at Noosa Junction is also being added to the park to conserve an important area of the rare Christmas bells *Blandfordia grandiflora*. This addition will also provide for better fire management access to the existing Weyba Link section.

Desired outcome

- To maintain the diversity of plant species, particularly the endangered, vulnerable and rare species and those of limited geographic distribution.

Proposed guidelines and actions

- Conduct surveys for the noteworthy plants to determine their distribution, site locations and ecological requirements and to determine which habitats are vulnerable to human impact, fire, weeds and feral animals.
- Map the locations of the noteworthy species and keep a photographic record of them at the Park and District office.
- Continue negotiations with the Department of Natural Resources on the inclusion of Emu Mountain in the national park. On gazettal of Emu Mountain:
 - protect the mountain and lower slopes to the highest possible degree to maintain the integrity of the vegetation and for the long-term survival of *Allocasuarina emuina*;
 - revegetate 4WD tracks and use physical barriers to prevent further uncontrolled vehicle access to the summit and lower slopes; and
 - conduct a weed control program along the sewerage main and the area south of the excavated drain.
- Continue negotiations with Noosa Council on the acquisition of 19ha adjacent to Cooyar Street and ensure a weed control program is carried out in the buffer vegetation.
- Develop a comprehensive weed control program for areas containing rare and threatened species, in particular, the Christmas bells *Blandfordia grandiflora* habitat.
- Continue to document information on plant communities including location (geographic, vegetation type) and abundance, with assistance from interest groups/individuals.
- Ensure the fire management plan for the park takes into account the ecological requirements of the noteworthy plant species.
- Fence the small addition of R1204 at Coolum containing *Eucalyptus conglomerata* and liaise with Regional staff to implement strategies to encourage seedling regeneration.
- Restrict visitor access to rare or threatened plant site localities.

Research and monitoring

Background information

Research and monitoring projects completed since 1992 include a scientific survey conducted in 1993 in some of the park areas to establish the population size of the endangered *Allocasuarina emuina*. More recent work on this species in 1997 determined its viability in populations around Coolumb. In 1995 researchers surveyed the population of the endangered swamp stringybark *Eucalyptus conglomerata* and developed a conservation research statement and proposed recovery plan (Drake 1995). A fire-monitoring project was set up for the Noosa Heads section in the 1980s.

Desired outcome

- To have an expanding knowledge of plant ecology on which to base management decisions.

Proposed guidelines and actions

- Establish the following research projects with assistance from QPWS specialists and tertiary institutions to provide valuable management information:
 - the distribution and status of the endangered and vulnerable *Phaius* orchids;
 - the fire history of the area and its relationship to the floristic structure and diversity of the coastal wallum heath;
 - the taxonomic status and relationships of *Allocasuarina* species which require detailed cytological/genetic studies.
- Set up applicable monitoring projects with priority given to:
 - photo-point monitoring of vegetation communities in relation to fire, particularly in the high dune heath and exclusion blocks at East Weyba;
 - fuel monitoring in the high dune heath and communities adjacent to the white cypress pine *Callitris columellaris* var. *campestris* community at East Weyba;
 - maintenance of the natural integrity of the vegetation contained within the park despite changing groundwater flows as a result of urban development;
 - photo-point monitoring and data recording in the wet heath at East Weyba (ground parrot habitat); and
 - monitoring *Allocasuarina emuina* populations.
- Continually monitor rare and threatened species' conservation status and adopt any approved recovery plans to restore the species to a more secure status.
- Liaise with tertiary institutions to benefit from their research studies involving plant communities and species. Encourage further research into management aspects of these communities.
- Liaise with nurseries and the Society for Growing Australian Plants on methods of propagating locally rare heath species.

Native animal management

Background information

The diversity of vegetation communities within Noosa National Park provides a broad range of habitats which allow a variety of invertebrate and vertebrate native animals to exist. Native animal surveys have been carried out for the East Weyba and West Weyba sections (Gynther, Adams & Horler 1992) and Noosa Heads (various lists).

Noteworthy animal species

The animal species considered noteworthy (see Appendix 2) are those which:

- are rare or threatened (endangered or vulnerable);
- live in susceptible or threatened communities, where the continued existence of an individual species is threatened by the prescribed management practices for the surrounding community, e.g. ground parrot survival threatened by adverse fire regime; and
- have a limited geographic distribution.

Two vulnerable species of fish occur in Marcus Creek, namely the Oxleyan pygmy perch *Nannoperca oxleyana* and the honey blue-eye *Pseudomugil mellis*. This is one of only four sites in south east Queensland where both fish are sympatric (Arthington & Marshall 1993).

The East Weyba section supports all four known rare or threatened acid frogs.

The diminishing areas of intact habitat along the Sunshine Coast is having an effect on a number of birds. The ground parrot relies on the closed heath and sedgeland for its survival. The park contains small areas of these communities but the birds need sufficient areas for breeding and feeding, as well as refuge and dispersal areas. Remaining areas outside the park are threatened by residential development. Other birds such as the glossy black-cockatoo and the white-bellied sea-eagle need large nesting and feed trees which are under threat from development.

Desired outcome

- The diversity of animal species and the populations of endangered, vulnerable and rare native animals are maintained.

Proposed guidelines and actions

- Conduct fauna surveys for the Coolum, North Weyba, Eenie Creek and Weyba Island park sections.
- Ascertain the distribution, abundance and ecological requirements of the noteworthy animal species (see Appendix 2), and determine which habitats are vulnerable to human impact, fire and weeds to implement management actions to ensure their continued viability in recorded locations.
- Maintain the acid frog and fish habitat in Marcus, Burgess, Castaways, Sunshine and Murdering Creeks through water quality testing set out in the Queensland Parks and Wildlife Service Water Quality Sampling Manual. In particular, monitor the pH, electrical conductivity, dissolved oxygen and temperature.
- Maintain a viable breeding population of ground parrots by implementing the following recommendations from the ground parrot study (McFarland 1989):
 - Implement a fire management program on all areas of *Caustis-Empodisma* heathland and *Baumea* sedgeland along the coastal strip from Coolum to Noosa Heads which would cover:
 - minimum fire-free intervals of 8-10 years;
 - winter burn of low-moderate intensity between May and June; and
 - creation and maintenance of a mosaic of blocks containing regeneration (0-4 years), mature (5-10 years) and senescent (>10 years) heathland communities.
 - Examine effects of fire management by maintaining up-to-date data on the status and size of the ground parrot population in the park at and after each fire.
 - Record information once a year at the same time.
 - Monitor plant and animal response to an increasing fire-free interval, particularly in fire-exclusion blocks greater than 15 years post-fire.
- Continue liaison with the Queensland Fire and Rescue Service in relation to the safety of people and infrastructure protection.
- Liaise with local governments on:
 - retaining large nesting trees and casuarina trees in development approvals, and
 - maintaining shorebird habitat free from significant human disturbance and including the management of shorebird species in a regional wetland management program.

Research and monitoring

Background information

Research projects have investigated the conservation requirements and biology of the vulnerable ground parrot *Pezoporus wallicus* which is supported by the heath and sedgeland communities found throughout the park (McFarland 1989; Clancy 1990).

Surveys conducted by the Service in 1997 also ascertained that the ground parrot occurs in the Coolum, Emu Swamp, East Weyba and Weyba Link sections of the park.

A recovery plan was drawn up for the Oxleyan pygmy perch (Arthington & Esdaile 1993) while the honey blue-eye's distribution, ecology and conservation has also been detailed (Arthington & Marshall 1993).

Desired outcome

- To have an expanding knowledge of native animal ecology on which to base management decisions.

Proposed guidelines and actions

- Establish research programs on the freshwater crayfish *Cherax* sp., the local brush-tailed phascogale *Phascogale tapoatafa* and the impact of feral cats and foxes to provide valuable management information.
- Continue monitoring of the ground parrot populations at locations recorded in 1997, in relation to prescribed fire management.
- Set up projects to monitor:
 - the presence of acid frogs and rare fish in the East Weyba section and Marcus Creek,
 - the presence of the eastern grey kangaroo *Macropus giganteus*, and
 - the presence of the painted snipe *Rostratula benghalensis australis* and other birds, in conjunction with the Queensland Ornithological Society.
- Liaise with Griffith University on further monitoring to assess the presence of the honey blue-eye *Pseudomugil mellis* and Oxleyan pygmy perch *Nannoperca oxleyana* populations and the status of water quality and physical habitat around the East Weyba section.
- Encourage tertiary institutions to undertake research work on rare or threatened native animal species.
- All external research projects conducted in Southern Region must be approved and covered by permits issued by the Southern Regional and District offices.

Weed management

Background information

Weeds are recognised as one of the major threats to the integrity of Noosa National Park. Of the 890 plant species recorded for the park, 132 species are weeds. Park staff are committed to implement specific control measures for four declared weed species. These are groundsel bush *Baccharis halimifolia*, salvinia *Salvinia molesta*, prickly pear *Opuntia stricta* and water hyacinth *Eichhornia crassipes*.

The presence of weed species on Noosa National Park is directly related to the surrounding land use. Weed infestations are of serious concern on the eastern edge of East Weyba, the northern end of Peregrin and the boundaries of the Noosa Heads section. These areas have adjacent residential development where nutrient levels are increased by stormwater runoff and septic disposal. Weed problems and solutions associated with residential areas are discussed in more detail in section 4.4 Neighbourhood issues.

Local community involvement and co-operation are needed to help to control or, at least, limit the number of weed species introduced to the park. Control of the introduction of weeds from residential garden rubbish dumped on park edges and the import of seeds of weed species by visitors, their vehicles and horses are important management issues.

Desired outcome

- A reduction in the extent of weed species within the park and no establishment of new species.

Proposed guidelines and actions

- Use the weed mapping done in 1995–96 to develop a weed control action plan with priority given to:

- declared plants;
- species disrupting rare plant communities or threatened species;
- Singapore daisy, asparagus fern, mile-a-minute, morning glory and glory lily on dune areas.
- Investigate the use of contractors and community groups in addition to park staff to conduct weed control programs and, where practicable, rehabilitate disturbed areas with the participation and support of local interest groups.
- Liaise with Noosa and Maroochy Shire Councils on relevant issues.
- Liaise with local nurseries to produce a recommended list of locally occurring plant species for circulation to park neighbours, local communities and local governments for advising landscape architects on future developments in surrounding areas.
- Dissuade local residents, through interpretation programs and regular ranger contact, from planting exotic species which have a tendency to spread into natural vegetation (see Appendix 3) and from dumping garden rubbish on park boundaries.
- Continue control of bitou bush *Chrysanthemoides monilifera* on Sunshine Headland and liaise with Department of Natural Resources on monitoring the sandy and rocky coastline areas and remove any plants found.
- Set up photo-monitoring sites on the Weyba Link and East Weyba sections to determine the spread of weed infestations, particularly in nutrient outflow areas.
- Liaise with Noosa Council on sewerage Weyba residential areas and relocating stormwater outlets which currently run onto the park.

Feral animals

Background information

Feral cats, foxes, dogs, black rats and cane toads are present on the park but their abundance, distribution and impact on native species are unknown. Predation by feral animals results in the decline of native reptiles, birds and small mammals. The fox is a 'declared animal' under the *Rural Lands Protection Act 1985* and must be controlled.

Feral animal management on the park has been on an informal basis only. Research and monitoring of feral species are seen as essential prerequisites to defining a control program.

Desired outcome

- A reduction in the impact of feral animals on the park.

Proposed guidelines and actions

- Implement a co-ordinated feral animal control program in conjunction with local governments and the Lands Protection Branch of the Department of Natural Resources.
- Monitor feral animal occurrence at regular intervals to determine effectiveness of control measures.
- Incorporate in park educational and interpretive programs a feral animal component, discussing the impact of feral animals on native wildlife and the potential of domestic animals to become a source of recruitment for feral populations.
- Provide feedback to local communities and those involved in control programs on the response of native animals to control measures.

Fire management

Background information

Much of Noosa National Park's vegetation is highly flammable. The seasonally dry plant communities including the sedgeland-grassland (wet heath), dry heath and high dune heath, low scrub and woodland and open eucalypt forest provide a large amount of fuel for fires.

The two types of fires to be considered for management issues on Noosa National Park are planned fires (prescribed burns) and unplanned fires (wildfires). The purposes of prescribed burns on national

parks are hazard reduction (i.e. reducing fuel loads to minimise intensity and rate of spread of wildfires) and approximating natural fire regimes to meet the requirements of the native plants and animals. Liaison occurs with Queensland Fire Services in all cases to ensure the protection of life and property.

The Queensland Parks and Wildlife Service is also responsible for protecting the habitats of rare or threatened species, such as ground parrots, which may be adversely affected by inappropriate fire regimes.

The close proximity of housing and tourist development has implications for fire management in Noosa National Park. Potential fire hazard areas exist in the vicinity of residential areas adjacent to park boundaries. Ecological burns occur throughout the park with the aim of reducing the fuel load in the heath and lessening the intensity of wildfires.

A fire management strategy is in place at Noosa Heads with fire blocks being based on vegetation communities, existing tracks and fire control lines. Changes to the existing fire regime are now required to rationalise some of the blocks, to preclude fire from sensitive sites and for long-term monitoring purposes.

Under the *Native Title Act 1993* notification procedures are required on actions in relation to fire management. These include the development of a fire management plan and undertaking prescribed burning where possible. Actions which do not require a notification procedure include backburning or the construction of fire breaks.

Desired outcomes

- Park visitors, infrastructure and adjacent property are protected from the impacts of fire.
- Species diversity within communities is maintained and populations of rare or threatened native plants and animals are protected.

Proposed guidelines and actions

- Prepare a fire management plan in consultation with local governments and neighbours detailing:
 - site-specific objectives of fire management for each park section in terms of natural resource and cultural heritage conservation;
 - appropriate fire regimes within each fire block;
 - assessment of fire risk to park resources, human life, park infrastructure and other property;
 - the works and resources needed to carry out the fire regime, e.g. fire access trails (type and location), staff and equipment;
 - procedural matters, detail of actions required, fire detection, and liaison between Ranger staff, neighbours, fire wardens and Queensland Fire Service; and
 - research and monitoring information and compilation and distribution of fire reports.
- Continue to document the fire history of the park including date, source of fire, extent, intensity and recovery with information recorded on the Geographic Information System.
- Set up fire-exclusion blocks to provide benchmarks for fire research and monitoring, and establish fire history records using aerial photography, strategic fuel sampling and recording of plant regenerative strategies.
- Notify the Undumbi people and FAIRA on the development of the fire management plan and undertaking prescribed burning where possible in accordance with the *Native Title Act 1993*.
- Liaise with Noosa Council to ensure fire hydrants and access to fire access trails are allowed for in the conditions of developments adjacent to the park.
- Incorporate a fire management component in education programs aimed at park visitors and other community and user groups.
- Contact neighbours on potential fire hazards and appropriate techniques to reduce fire risk.

Water quality management

Background information

The urbanisation of catchments threatens water quality. This, in turn, has an impact on aquatic and terrestrial ecosystems, fisheries and water extraction. Development is occurring to the north, west and south of Lake Weyba. Threats to the water quality and lake foreshore vegetation include sewage disposal and urban runoff, golf courses, horseriding, the presence of transport corridors, and use of the water supply for agriculture, human consumption and industry. Table 2 outlines threats to particular plant communities and associated creeks.

Table 2. Threats to water quality.

Area of concern	Impacts/issues
Wetlands on the western side of Lake Weyba	Sedgeland and wet heath are being used to assist sediment deposition and the uptake of dissolved nutrients. Use of natural vegetation as sinks and filters leads to an increased nutrient load. As the area supports vegetation adapted to low-nutrient status, the increase in nutrients causes weed invasion and a change in species composition.
Lake foreshore communities	The influx of nutrient and sediments from the catchment during high rainfall leads to high nutrient and silt loading of the tidal riparian and lake foreshore vegetation.
Melaleuca communities	Widespread removal of these communities is associated with development of land along the southern foreshore.
Marcus and Castaways Creeks	Several species of endemic fish and frogs of conservation significance are associated with these acidic aquatic environments which are vulnerable to the impacts of coastal development such as seepage from septic systems. (Refer to Native animal management.)
Burgess Creek	The increased pH and nutrient loads from the sewage disposal flowing into this low-nutrient system are causing heavy infestations of groundsel, <i>Typha</i> and exotic sedges in the vegetation along the creek. There may be major impacts on the native animals, especially frogs adapted to low pH environments.

Desired outcome

- The park is protected from the negative impacts of surrounding catchment management practices.

Proposed guidelines and actions

- Liaise with Noosa Council on water quality monitoring in Burgess, Castaways, Marcus and Murdering Creeks and undertake action to minimise detrimental impacts on the creeks.
- In relation to Marcus Creek and its lagoon:
 - seek its inclusion in the Marcus Shores park proposal; and
 - liaise with Noosa Council on connecting the residential estate on the southern boundary to sewer systems.
- Liaise with local governments on:
 - connecting the residences west of the David Low Way, which are presently on septic systems, to the main sewerage system;
 - conserving foreshore areas surrounding Lake Weyba; and

- not using natural wetland areas, especially those on the western side of Lake Weyba and Noosa Springs, as sediment traps and for the uptake of dissolved process nutrients.
- Seek local government support to have developers fund monitoring programs (approved by QPWS) of groundwater to ensure that any septic systems and sediment control devices in completed developments are performing as predicted.
- Liaise with local governments on options for controlling stormwater and urban seepage from residential or other developments.
- Liaise with landholders along the frontage of Lake Weyba on conservation measures to protect the lake foreshore vegetation.

4.2 Cultural heritage management

Background information

The Sunshine Coast and hinterland have been inhabited by Aboriginal people for thousands of years. The Noosa area has middens, scarred trees, bora rings, artefact scatters, campsites and a mission site at Lake Weyba. Reports of feeding and ceremonial sites at Noosa Heads are common but the exact locations of many sites are not known. Many of the locations and sites of Aboriginal significance are known only to Aboriginal people due to the level of responsibility required of caretakers for the protection of these sites.

Some midden sites have been found on the shores of Lake Weyba, which was probably an important source of fish and shellfish for the local Aborigines. Another midden was exposed (8 metres down in the foredunes) at Peregrin after beach erosion (McQueen 1991).

A Native Title Claim has been lodged with the National Native Title Tribunal on behalf of the Undumbi people which covers Noosa National Park.

A Cultural Heritage Management Plan will be developed for the park and will identify Undumbi rights, interests and involvement in park management, protection and management strategies for identified issues and sites, and determine if presentation is appropriate.

Desired outcome

- The interests of Aboriginal people are reflected through their involvement in the management of the park.

Proposed guidelines and actions

- Continue to establish the indigenous and historic cultural values of the park by involving the local indigenous community and historical societies in identifying places of cultural heritage significance.
- Ensure the involvement of the local Aboriginal people in defining appropriate measures to protect the natural resources and cultural heritage significance within the park.
- Ensure the involvement of local historical societies in developing methods for protecting sites of heritage significance.

4.3 Recreation, tourism and visitor use

Recreation

Background information

The Sunshine Coast's scenic and recreational attractions, access, accommodation, tourist services and shopping facilities attract tourists.

Noosa National Park is the most heavily used national park in south-east Queensland with estimates of use greater than one million visitors per year. A visitor use study with traffic and pedestrian counts is

currently being undertaken on the park by the Service to gather more precise information on visitor numbers and use patterns to better manage the park for visitor needs and support desired outcomes of park management.

Park visitors fall into four categories:

- Day visitors use the park, particularly Noosa Heads, to picnic and walk and to gain access to the coastline for swimming, sunbaking, surfing and fishing. The Weyba and Peregrine sections offer the more remote experiences of bushwalking, birdwatching and wildflower viewing.
- Park neighbours visit the park daily for exercise on walking tracks.
- Commercial tour operators concentrate their activities around Laguna Lookout and the Noosa Heads main entrance. Aircraft and helicopters take scenic flights over Noosa Heads.
- School groups use the park areas to study the rainforest, adjacent intertidal marine life, foredune vegetation, geology and human impact on the environment.

The vast majority of these visitors concentrate in the Noosa Heads section, resulting in conflict between competing user expectations. It is essential to maintain the quality of each type of park experience, while protecting to the greatest possible extent the park's conservation values. A series of zones have been defined; these set out appropriate recreational activities and levels of use for particular areas.

These four zones are determined according to:

- nature conservation values relating to the plant and animal communities and fragile landforms;
- cultural heritage significance;
- the recreation opportunities present, degree of access and existing use patterns;
- appropriate infrastructure needs; and
- appropriate visitor use and activities.

Intensive recreation zone

The intensive recreation zone will be the most developed zone of the park and will be maintained to cater for the large numbers of visitors. Unobtrusive recreational facilities and developments will be situated in the natural coastal settings and will include picnic tables, toilets, electric barbecues and an interpretive centre.

This zone will include walking tracks classed as pathways (one of five track classes proposed by the Queensland Parks and Wildlife Service according to physical and experiential conditions). Pathways are very well formed and intensively managed, catering for large numbers of people of all ages and fitness levels. Users require limited fitness and experience and can expect frequent encounters with other users.

Conservation and recreation zone

As the name implies, this zone will include areas which are used by a large number of visitors but which are to remain in as natural a state as possible. The conservation values will not be adversely affected by the constant recreational use and management infrastructure will be developed to ensure values are protected.

This zone will include walking tracks which cater for a reasonably large number of users. They are relatively well formed and maintained. Users require some fitness and can expect frequent encounters with other users.

Conservation zone

This zone will include areas which support fragile ecosystems or species and must remain relatively undisturbed by the recreational activities allowed. It will provide for low-key bushwalking opportunities to pursue activities such as birdwatching and wildflower viewing.

Walking tracks in this zone are classed as rough tracks. They are distinct with a naturally occurring surface and are not usually formed or maintained. Users should be reasonably fit and require a moderate degree of skill and experience. Relatively few encounters with other walkers can be expected.

Special protection zone

Areas designated within this zone have special conservation values and will be managed to protect the natural resources present — e.g. ground parrot habitat, or communities which are threatened or hold rare or threatened plant species. Appropriate protection would include sympathetic fire regimes and restricting public access to fire access trails.

Table 3. Characteristics of management zones.

Zone characteristic	Zone	
	Special protection zone	Conservation zone
Principal purposes	Special protection - natural resource conservation	Conservation, low-intensity recreation.
Physical setting	Special protection zones may be declared over areas containing fragile or noteworthy plant/animal species or communities, fragile geological features or sites of cultural significance.	Natural vegetation and landscape dominates and is essentially unmodified. Occasional aircraft sounds.
Road access	For special protection purposes only. No public vehicle access.	Management access along tracks in emergencies (e.g. fire, visitor safety) and for natural resource management. No public vehicle access.
Facilities and infrastructure <i>Extent, type and design of infrastructure, facilities and amenities</i>	Management access trails for specific natural resource management. Management infrastructure for protection purposes only. No further visitor facilities.	Fire or management access trails which double as walking tracks. Fire access trails may have minor realignment. Management infrastructure for erosion and safety purposes only. No further visitor facilities other than track upgrades.
Social setting <i>Activities and recreational experiences</i>	Public access may not be denied, but will be under strict control. No camping. Commercially operated activities on existing trails only.	More isolated walking experiences. Infrequent contact with other visitors. Opportunities for closeness to nature and tranquillity in a natural coastal setting where the sights and sounds of human presence are not obvious. Commercially operated activities through permit. Educational use with QPWS permission. No camping.
Interpretation	No on-site interpretation.	Boundary and management signs only.
Managerial setting	Infrequent Ranger presence for specific management purposes.	Management presence will be obvious for the Noosa Heads section only. Lake Weyba sections will have infrequent management presence.

Zone	
Conservation and recreation zone	Intensive recreation zone
Conservation, medium-intensity recreation	High-intensity recreation
Natural vegetation and landscape mostly dominates. Human-modified landscapes for recreation or erosion control evident along tracks.	Mostly modified natural environment which constitutes the background setting for recreational infrastructure and use areas. Human activity obvious. Hardened (sealed or paved) and open grassy areas dominate with motorised vehicle sights and sounds apparent.
Frequently used management access roads. No public vehicle access.	Access for management and recreation.
Hardened surface walking tracks: graded tracks not exceeding a slope of 1:10 and 750-1200mm width; pathways not exceeding 2200mm width. Steps, seats, handrails, protected lookouts and a toilet may be provided along track. Management infrastructure may include hardened tracks and fencing for safety and conservation purposes.	Carpark, seats, toilets, lookout points, picnic ground. Interpretive centre at Noosa Heads only. Hardened surface walking tracks: pathways not exceeding a slope of 1:10 and not exceeding 2200mm width.
High level of visitor interaction and opportunities to enjoy the natural setting. No previous bushwalking experience required. The greatest diversity of active recreational activities available within this zone and in adjacent marine and intertidal areas. Access to pathways for disabled. Commercial operator use through permit system. Educational use with QPWS permission. No camping.	High to very high level of visitor interaction involving groups pursuing both active and passive activities. Little opportunity for isolation. No camping.
Boundary and management signs only. Use of signs for management, orientation and interpretation purposes. Interpretive displays and self-guided interpretive tracks may be present.	Visitor centre present with structured activities offered. Information boards for management, interpretive and orientation purposes.
Frequent management presence and control.	Daily management presence.

Desired outcome

- To have a range of nature-based recreation opportunities which highlight the park's character and which complement other local and regional opportunities.

Proposed guidelines and actions

- Assess the present range of recreational opportunities and experiences by surveying visitor numbers, reasons for visiting, location, use of recreational facilities and visitor attitudes.
- Prepare a recreation action plan detailing the construction schedule for recreational facilities, including walking tracks in accordance with the zoning scheme and QPWS standards, and taking into account places of cultural or historic heritage.
- Monitor recreational impacts using photo-monitoring points at suitable sites to measure impacts including erosion, trampling and littering.
- Develop co-operative liaison with:
 - user groups to monitor attitudes to recreational experiences and expectations;
 - local governments on the promotion and use of off-park recreation areas; and
 - park neighbours and local communities regarding access, promotion and use of park areas.

Visitor use and behaviour

Background information

The naturalness of the park environment is one of the main values on which the quality of visitor experiences depends. It is essential to preclude activities on national parks which damage either natural or cultural resources or conflict with nature-based recreation.

At Noosa National Park visitor use and behaviour must be regulated in a number of instances. The most compelling concerns for management are:

- local residents and visitors bringing domestic animals, particularly dogs, onto the park;
- vandalism or arson;
- horseriding on park areas;
- trampling and erosion of track areas and off-track walking (short-cuts between tracks and to the headlands, beach and surf);
- foredune erosion caused by recreational activities, including surfing and fishing, which have resulted in many informal trails;
- damage to places of cultural heritage significance;
- 4WD and trailbike use;
- removal or destruction of native plants or animals;
- littering, especially on walking tracks, on beaches and in picnic grounds;
- illegal camping;
- visitors running on walking tracks;
- cycling on walking tracks; and
- spearguns carried on the park.

Limiting visitor numbers does not necessarily reduce environmental impacts. Visitor education and park interpretation can be more effective in controlling visitor impacts.

The adjacent intertidal area at Noosa Heads supporting marine life is being damaged and wildlife is being removed from rock pools. This area is under the jurisdiction of the Noosa Council.

Horseriding by individuals and clubs occurs on the western side of Lake Weyba. The foreshores of the lake and gazetted roads are used for carrying out activities. The West Weyba and Eenie Creek sections of the park suffer from the effects of horseriding, including trampling of vegetation and introduction of weed species. Local riders use the track along the gazetted road running west to east through the park, but are obviously leaving this track and traversing other areas of the park to get closer to the lake. The Eenie Creek section is experiencing degradation as a result of horses trampling through the fragile marine couch areas. Recreational horseriding is not permitted on national parks.

Desired outcome

- Recreational use of the park is compatible with conserving the natural and cultural values.

Proposed guidelines and actions

- Close areas for rehabilitation within the intensive recreation zone at Noosa Heads if damage to the sites and surrounding vegetation communities occurs.
- Arrange regular Ranger patrols of high visitation sites including the Coast track, Alexandria Bay and Teatree Bay.
- Ensure pre-visit information makes visitors aware of appropriate nature-based activities that are permitted in the park and regulations regarding domestic animals and fire etc.
- Advise horseriding activities are not permitted on Noosa National Park through park signs, interpretive material and brochures. Monitor the presence of horses on the park sections to the west of Lake Weyba.
- Incorporate visitor behaviour issues into interpretive programs and provide information on regulations to local accommodation centres and tourist operators.
- Rangers to issue on the spot fines for penalties incurred for breaches of the *Nature Conservation Regulation 1994*.
- Continue to notify Queensland Police Service of criminal offences and encourage regular police patrols on the park to help reduce the incidence of vandalism, arson and other unlawful activities.
- Monitor recreational impacts on the Coast track and Alexandria Bay at Noosa Heads.
- Investigate protected area status for managing the marine and intertidal areas at Noosa Heads.

Visitor safety

Background information

The Queensland Parks and Wildlife Service has an obligation to minimise risks to the public in the park. Part of the park boundary is high water mark. Activities occurring adjacent to the national park between high water mark and low water mark are the responsibility of the local governments. Recreational activities conducted in the water, such as swimming, jetskiing and spearfishing, are the responsibility of the Department of Primary Industries, Fisheries and Forestry.

Visitor safety issues include:

- the carrying of spearguns, fishing rods and surfboards through the park;
- jetskis coming into the swimming area and going ashore at Teatree Bay, causing conflict with park users due to their high noise output and the hazard they represent to swimmers;
- cliff edges associated with the high, rocky headlands — fishers and people using the headlands at night are particularly at risk;
- assaults and offensive behaviour, particularly on inland tracks that receive less use;
- extreme wind conditions creating potential safety problems with falling tree limbs;
- fire in the form of wildfires or prescribed burns creating a risk to the public within the park boundaries or to the public and property adjacent to the park; and
- cycling on walking tracks.

Public information, through direct contact or appropriate signs, is required to reduce or eliminate the risks associated with these areas or activities.

Desired outcome

- The exposure of park users to perceived risks is reduced.

Proposed guidelines and actions

- Minimise the probability of visitor injuries and assaults through:
 - signs including warning signs where necessary;
 - safety messages in brochures and displays;
 - verbal advice in the information centre;

- law enforcement; and
- contact with tour guides etc.
- Maintain all structures and ground surfaces in intensive recreation areas in a safe condition through regular park inspections as part of the Regional risk management program. Close dangerous tracks and erect signs and/or fencing at dangerous sites.
- For dangerous park-wide conditions (e.g. during extreme wind or wildfire conditions), provide information at entrances and implement an evacuation plan. At other times, inform visitors of the danger, the possible consequences and safe behaviour to adopt.
- Continue to notify Queensland Police Service of criminal offences.
- Allow no open fires on the park.

Visitor access and facilities

Background information

Noosa National Park is one of the most visited locations within the Noosa Shire for both tourists and residents. Members of the public visit the park areas and adjacent coastal beaches which provide a natural coastal setting to relax and reflect, away from the surrounding urban environment.

Proper planning of access to the national park is fundamental to delivering and maintaining quality recreation experiences. It also provides a mechanism to manage visitor impacts, especially in relation to the impact on the sand landscapes and the coastal and lake foreshore plant communities which are particularly susceptible to erosion and trampling of vegetation.

Noosa National Park is subject to provisions of the *Environmental Protection Act 1994* and Regulations relating to environmentally relevant activities. The Queensland Parks and Wildlife Service requires a licence to carry out such activities which have an impact on the park environment. In compliance with the Act, an Environmental Management Program has been developed for Noosa National Park — Teatree Bay area.

Noosa Heads section

The main entry point to the national park is at Noosa Heads via Park Road. This area includes vehicle parking for visitors, an access point for walking tracks, a picnic area, an information centre and a base for management. Many visitors come here to go walking, picnicking, swimming and surfing. Access to Noosa Heads also occurs via Viewland Drive to Laguna Lookout. Pedestrian access is available at a number of points around the perimeter of the headland, with the Park Road boardwalk being the most commonly used.

Day-use facilities at Noosa Heads include a picnic area with tables, toilets, bins and electric barbecues. Access to Teatree Bay is provided for disabled persons via the Coast track.

The carpark/picnic ground has been redeveloped to enhance the natural character of the main entrance at Noosa Heads and prevent:

- soil compaction and the continual erosion of the foreshore areas,
- vehicle competition with pedestrians in a poor circulation design, and
- the offensive view of cars from Laguna Bay.

Provision has been made for:

- 60 cars, 3 minibuses, motorcycles and bicycles;
- shuttle bus drop-off point (no coaches due to 9-tonne limit on Park Road);
- pedestrian and vehicle access through entrance gate system;
- service vehicle access to park office and workshop area;
- the ability to close the carpark in certain situations, e.g. extreme weather;
- shoreline protection and erosion control;
- an amphitheatre for interpretation programs; and
- a new sewerage toilet facility.

The shuttle bus service run over a three-week period in June–July 1997, when the carpark was closed for redevelopment, was a success as an alternative to people driving their cars to the park. With improved promotion and community acceptance, this would become an efficient alternative to cars, with the associated parking problems.

Parking problems are occurring in residential streets around the southern end of Noosa Heads. The public residential streets close to the national park and the beaches are being used for parking by visitors to the area. However there has been on-going residential concern about traffic and parking problems in this area. There is no opportunity to provide for parking at either McAnally Drive or Parkedge Road without compromising park values. Also, national parks are reserved for their conservation, scenic and recreational values. The Queensland Parks and Wildlife Service is not obliged to provide any parking on park land, nor does it consider carparks a priority.

A comprehensive investigation of the parking issue, funded jointly by Noosa Council, QPWS and Queensland Transport, is being undertaken which will consider the following options:

- traffic management in the streets;
- potential for provision of small additional parking areas in an undeveloped road reserve; and
- an examination of potential bus services in the short, medium and long term.

The walking track from McAnally Drive to Alexandria Bay was upgraded for major erosion control and was not intended to provide a formal access point into the park. Difficulties and costs are clearly associated with the day-to-day management of a second major access point into Noosa Heads.

Uncontrolled pedestrian access occurs along the southern boundary of the headland, to and from the beach areas and along the western side adjacent to residences. Illegal camping is occurring at Alexandria Bay and Teatree Bay.

Lake Weyba park sections

Uncontrolled access and illegal camping are occurring in the park areas surrounding Lake Weyba, resulting in littering and degradation of the vegetation. Camping is inappropriate on any section of the park, and particularly on the Weyba sections, for a number of reasons:

- poor drainage and susceptibility to inundation precluding the establishment of any developed camping facilities;
- the presence of ecologically sensitive areas such as the paperbark vegetation with rainforest understorey and the swamp orchid *Phaius tancarvilleae* areas;
- the degradation of the scenic value of the lake foreshores; and
- the availability of private camping facilities nearby.

Much of the East Weyba and Peregrine sections of the park was previously used as a military bombing range. These areas contain dangerous unexploded ordnance (UXO) such as artillery and mortar shells and have been designated contaminated land. The presence of UXO necessitates restrictions on public access for safety reasons. Restrictions on access may also occur due to the area's cultural values and liaison with Aboriginal groups is essential before any access decisions are made.

Present vehicle tracks used for management on the East Weyba section link with Marcus Shores. Only those tracks cleared for UXO will be used for walking tracks.

Desired outcome

- Recreational access and facilities on the national park complement the natural setting and do not compromise natural or cultural conservation values.

Proposed guidelines and actions

- Vehicular access to be restricted to Viewland Drive and tracks required for management purposes. Close and revegetate all remaining vehicle tracks not needed for management purposes and place signs to allow access via defined walking tracks only. Place locked gates on management access tracks.

- Continue liaison with Noosa Council on:
 - traffic calming options for Woodland Drive; and
 - options for a shuttle bus service to Noosa Heads.
- Continue liaison with Noosa Council and Queensland Transport on traffic and parking solutions for the southern end of Noosa Heads.
- Close and revegetate informal walking routes on the frontal dunes at Peregian.
- Remove the hang-gliding ramp on Sunshine Beach for safety and liability reasons and liaise with the hang-gliding club on more appropriate options.
- Use strategic fencing in appropriate areas such as the southern end of Alexandria Bay to prevent unauthorised access and protect dunes.
- Prohibit paragliding from the southern dune of Alexandria Bay.
- Recreational access and facility issues will need to be referred to the Aboriginal groups before any development of tracks or facilities.
- Liaise with the following non-emergency services to minimise the impact of access:
 - local council surveyors carrying out photo-monitoring of beach and sand accretion and erosion at Alexandria Bay; and
 - RAAF radio-monitoring of the Brisbane-Gladstone Yacht Race from Sunshine Headland.
- Allow access for services such as Ambulance, Fire Service, Police and Lifesavers.
- Upgrade the on-site treatment and disposal system at Teatree Bay in accordance with the Environmental Management Program and monitor for performance.
- Re-design Laguna Lookout area to enhance the natural setting and provide for parking spaces, a turn-around point for buses and a defined walking track to the lookout.
- Investigate options to install an emergency phone at Alexandria Bay.
- Define a single pedestrian access point on the eastern boundary of the North Weyba section.
- No additional day-use facilities to be provided at the Weyba, Coolum, Peregian and Eenie Creek sections.
- Control illegal camping through on-the-spot fines and signs prohibiting camping at sites such as Teatree Bay, Alexandria Bay and Lake Weyba. Updated information regarding available camping on private property and council reserves will be included on visitor information sheets.

Walking

Background information

People's recognition of the need to escape work and urban pressures has led to an increase in outdoor recreation on national parks. Noosa National Park provides a variety of walking experiences of varying lengths leading through different types of vegetation, from rainforest to open heath.

Noosa Heads section

Noosa Heads contains five maintained track systems:

- Palm Grove circuit — a 1km self-guiding walk through rainforest and tall open forest;
- Tanglewood track — a 4.2km walk to Hells Gates through open eucalypt woodlands, transition forest and wallum heath;
- Noosa Hill track — a 3.4km circuit through open eucalypt woodlands and shrublands;
- Coast track — a 2.7km walk to Hells Gates along the shoreline and around several headlands; and
- Alexandria Bay track — a 1.5km walk traversing woodlands and open heathland.

Peregian/Weyba/Coolum sections

At Peregian the walking track, which includes a boardwalk, leads through low-lying wallum heath and *Casuarina* forested dunes and is used mainly for nature observation and beach access. The Weyba and Coolum sections contain former vehicle tracks which have been upgraded as fire access trails. These trails are presently used by walkers for a semi-wilderness experience and for birdwatching and wildflower viewing.

The Weyba Link section contains low swampy areas and drainage lines of Burgess Creek and conserves part of the habitat of the rare Christmas bells *Blandfordia grandiflora*. It is part of a designated UXO

(unexploded ordnance) survey zone which runs down the eastern side of Lake Weyba and incorporates the Peregian section.

The construction of walking tracks through this area is not consistent with the management of the park's natural values and would result in the following impacts:

- disturbance of ground parrot habitat by physically disturbing key feeding areas and opening up the area for feral animals such as foxes which prey on the ground parrots;
- increased risk of destructive wildfires; and
- physical disturbance to the rare Christmas bells habitat and an increased likelihood of illegal taking.

Apart from the ecological implications, constructing a track through this habitat would also be very expensive. The area would require UXO clearance and the construction of a fireproof boardwalk over the wetter sections.

Desired outcome

- To have a diversity of walking opportunities which is compatible with the natural and cultural conservation and natural amenity values of the park.

Proposed guidelines and actions

- As part of a track plan for the Noosa Heads section:
 - walking access will be provided to specific sites from the Coast Track, including Teatree Bay, Granite Bay, Hells Gates and Paradise Cave;
 - a formal access track will be provided from Sunshine Beach to Alexandria Bay;
 - close and revegetate those tracks marked for closure on Map 2 .
- Define adjacent lookouts on the Coast track to minimise erosion.
- Maintain a single walking track from McAnally Drive to Alexandria Bay and close and revegetate surrounding dune areas to reduce or prevent erosion.
- Warning signs to be erected to encourage walkers not to stray from existing trails in the East Weyba, Peregian and Coolum sections due to the risk presented by the UXOs.
- With the gazettal of Emu Mountain, consider a walking track and a lookout with interpretation on the Weyba area.
- Any track may be temporarily closed to the public if necessitated by track conditions or for other substantial reason.
- Promote minimal impact and safe walking practices in all public brochures.
- Assess and monitor public use of walking tracks and access points in East Weyba in terms of the recreational experiences, erosion impacts and damage to surrounding vegetation.

Public contact

Background information

Public contact involves on-park interpretation, the publication of information sheets and brochures, education and park law enforcement. Noosa National Park is one of south-east Queensland's key sites for public contact as it attracts large visitor numbers. This makes it an ideal location to interpret the natural features, cultural heritage and human use of the coastal strip and illustrate important conservation messages.

Public contact is closely integrated with resource protection as it can prevent or diminish visitor impacts, making visitors aware of and concerned about park values. Key interpretive topics include:

Park visitor impacts

- unlawful entry of dogs accompanying humans
- erosion caused by off-track walking, especially on dunes
- minor littering, vandalism and removal of plants
- public vehicle and trailbike use (Weyba sections)

Park visitor safety

- assaults and offensive behaviour
- swimming
- cliff edges
- elderly/infirm exceeding physical capabilities

Park neighbours and local governments

- stray domestic animals (dogs attacking koalas, cats preying on native birds)
- dumping of rubbish, especially garden rubbish
- stormwater discharge and draining of septic systems into park
- seeds from garden exotics entering park
- maintaining vegetated corridors and buffers to the park
- increased unscheduled fire frequency

Commercial developers, tourist operators etc.

- adjacent land developments

Existing public contact facilities include a small information centre with interpretive and educational material, an outdoor amphitheatre, a twelve-sided shelter display stand, some orientation signs, a visitor information sheet and a self-guided walking track. An Aboriginal interpretation ranger position is to be appointed to the North Moreton District to plan and conduct cultural activities.

As well as providing input to Education Queensland's curricula, the QPWS produces brochures, some of which are park-specific, for school teachers. Noosa National Park is mainly used by school groups within the Noosa Shire for day excursions to examine intertidal marine environments, native vegetation communities and geological processes. The Coolum section is conveniently situated for natural resource excursions from the nearby Coolum State High School. Off-park interpretation occurs at schools from Caboolture to Gympie and park-based talks are given to community groups.

Some problems exist in relation to educational use of the park. Current staffing levels and work commitments mean that staff are unable to meet the demand for school-based talks. Preference is given to teacher seminars, reaching teachers rather than students, where interpretive staff give talks to groups of tertiary students and at teacher conferences. Some schools which use the park without contacting QPWS have teachers who do not have adequate resource knowledge or do not ensure that student behaviour is appropriate for a visit to the park.

Desired outcomes

- Community awareness and appreciation of the natural and cultural values of the region are raised.
- The community is involved in the protection of the natural ecosystems and cultural places.
- The community supports the implementation of expressed management purposes and actions.

Proposed guidelines and actions

- Improve directional, interpretational and risk management signs, and ensure that proposed interpretive facilities and services enhance the management of the park.
- Provide pre-visit and on-park information to visitors so they have an awareness of park values, appropriate nature-based recreational expectations and knowledge to plan their visit.
- Produce a visitor information sheet as a guide to walking tracks in conservation zones, focusing on natural resource information.
- Provide opportunities for visitors to learn and appreciate the natural and cultural values of the park through:
 - interpretive activities during holiday periods;
 - slide programs;
 - Noosa-Coolooloolooklet;
 - interpretive signs at the Boiling Pot, Dolphin Point and Laguna Lookout; and
 - Aboriginal information signs.

- Establish co-operative relationships with the traditional custodians of the area and encourage and implement the appropriate interpretation of this culture as desired by the Aboriginal community.
- Improve visitor behaviour, understanding and support of park management initiatives through:
 - maximising the staffing of the information centre and Ranger patrols where possible,
 - management interpretive signs placed at problem areas, and
 - provision of pre-visit information to accommodation houses and tour operators.
- Increase surfboard riders' support of park management, particularly in relation to protection of coastal fringe areas through:
 - placement of pictograms with arrows on approved surf access trails; and
 - liaison with Noosa Board Riders Club and placing park management articles in surfing magazines.
- Provide adequate warning for safety hazards through management signs showing safe swimming codes, emergency help procedures and dangerous areas.
- Assess the need for multilingual signs from the visitor survey.
- Maintain and further develop co-operation from neighbours in managing the park with respect to wildfires, domestic animals, pollution of water and weed invasion through:
 - management messages in local newspapers;
 - management package for distribution to neighbours;
 - regular quarterly newsletter; and
 - special interest discussions organised for the local community.
- Assess the need for a volunteer network and identify areas where volunteers can effectively support Queensland Parks and Wildlife Service projects.
- With the gazettal of Emu Mountain, investigate the options of having a lookout from which to interpret the heath and ground parrots.
- Liaise with Education Queensland to ensure that all schools:
 - notify park staff of their visit and its purpose four weeks in advance;
 - provide a copy of their worksheets and itinerary (maintain office reference folder); and
 - are aware of national park regulations and ensure students behave appropriately.
- Allocate priority to school groups which are well planned and organised and can demonstrate the need to use the park environment.
- Maintain a record of school group behaviour and give priority to groups which have not caused problems or damage to the park environment.
- Liaise with Education Queensland to prepare a curriculum-based excursion guide for Noosa National Park and a pre-visit orientation package.
- Liaise with tertiary education institutions to encourage short-term studies in natural resource management and human-use influences.

Commercial operations

Background information

Commercial activities are those conducted by any person, company or organisation for financial reward. Commercial activities conducted on national parks require permits. Permit holders are required to abide by conditions of the permit in relation to use of the park, activities conducted, access, visitor safety and visitor behaviour.

Commercial activity permits are presently issued to eleven tour operators for Noosa National Park (1998 figures). Tour activity is concentrated at Laguna Lookout and the main park entrance. However, some tour operators are using the park without permits.

A number of operators are offering aircraft or helicopter flights over the park, especially the Noosa Heads area. The use of aircraft to view the spectacular coastline can cause disturbance to some native animals and to national park users who have come to the area for quiet relaxation. AirServices Australia regulations impose a 500ft minimum height restriction on all aircraft but this is clearly being ignored by some operators.

Desired outcome

- Park use by commercial tour operators supports Queensland Parks and Wildlife Service management and complies with QPWS guidelines.

Proposed guidelines and actions

- Ensure all commercial tour operators who possess permits to enter the park are appropriately informed and trained in the correct behaviour and procedures required to ensure the long-term use of the park's facilities and maintenance of the park's natural and cultural values.
- Ensure tour operators have correct information on the park's natural environment and cultural heritage significance.
- Encourage nature-based commercial activities.
- Monitor the need for training of tour operators or guides and implement training workshops accordingly to minimise the physical impact and maximise interpretive potential.
- Set out park-use guidelines for tour operators on:
 - regulation of activities;
 - group size;
 - duration of visit; and
 - co-ordination of days for different tours.
- Park staff to monitor and regularly assess the compatibility of tour operator activities with the management objectives of the park in relation to management zoning, conservation and recreation.
- Liaise with AirServices Australia on enforcing height restrictions for all recreational aircraft flying in the region.
- Include observance of the height restriction as a condition on commercial aviation permits, a breach of which could result in suspension/cancellation and/or fine.
- Confine public vehicular use in the park to formally hardened car parking areas.
- Continue to liaise with operators to ensure all hold current permits.
- Continue to review permit system yearly in terms of user numbers, QPWS regulations and available park facilities.

4.4 Neighbourhood issues

Complementary management of adjoining areas

Background information

The park areas conserve significant landscapes and communities which are part of the coastal ecosystems of the Sunshine Coast. However, the protection of fragments of these ecosystems in the national park is insufficient to ensure the long-term viability of coastal ecosystem diversity and processes. The retention of natural vegetated areas adjacent to or linking the park is not only desirable but vital if the national park is to retain its conservation value and scenic appeal.

QPWS jurisdiction stops at the park boundary and the Service has no control over adjoining or adjacent lands. However a number of reserves and other areas of land of conservation value are held by local governments or State Government agencies in the Noosa-Weyba region. They have ecologically significant landscape and vegetation components and function as connective or buffering areas to the national park. These areas are shown on Map 1.

- 1 Recreation Reserve R1355 (Noosa Council) conserves *Banksia integrifolia/Casuarina equisetifolia* low/ mid-high open forest with a permanent lagoon in which Oxleyan pygmy perch have been recorded. It provides a continuous vegetated link from the foreshore to Marcus Shores and East Weyba section. This reserve is zoned as Open Space-Conservation and Waterway Protection in the Noosa Shire Strategic Plan: Eastern Beaches Locality.
- 2 R1315 Reserve for Park and Recreation (Maroochy Shire Council) protects vegetation lining Stumers Creek and assists in the management of the Peregrine section. It has been designated for Conservation on the Maroochy Shire Council Strategic Plan 1996.

- 3 Recreation Reserve R1632 (Maroochy Shire Council) on the southern and western esplanade of Lake Weyba helps preserve Lake Weyba's water quality and forms a link between eastern and western sections of the park. The esplanade is also an important link for macropods. It has been designated for Conservation on the Maroochy Shire Council Strategic Plan 1996.
- 4 Marcus Shores (Australian Housing and Land Lease on Crown land) is the most regionally significant site of high dune heath on this coastal strip. It is an integral part of the Noosa-Peregian high dune system which is the only mainland representation of such a system south of the Noosa River. It provides the last remaining link between the foredune vegetation complexes (conserved as Council Park Reserves) and the national park. Marcus Shores is zoned as Open Space-Conservation and Waterway Protection in the Noosa Shire Strategic Plan: Eastern Beaches Locality.

The conservation of such linkages is important to sustaining the native plants and animals of these areas, which are too small to sustain all species unless connected in a network (Catterall and Rishworth, 1993). Marcus Shores contains several noteworthy plant species and is an important habitat for nectar-feeding birds.

- 5 Lot 1451 (Tourism, Small Business and Industry land) is of regional significance as an area of intact vegetation with the following values:
 - presence of suitable wet heath habitat to support the vulnerable ground parrot;
 - threatened wetlands of *Melaleuca quinquenervia* open forests and sedgeland;
 - uncommon *Eucalyptus bancroftii* open forest;
 - poorly conserved *E. racemosa* open forest on sandstone;
 - the endangered plant *Allocasuarina emuina*; and
 - an important link with the Coolum section for native animal habitat (QDEH, 1994).

The eastern part of the site (shown on map 1) has been designated for Conservation in the Maroochy Shire Council Strategic Plan 1996.

- 6 Unallocated State Land on the eastern and northern boundary of the East Weyba section provides important buffering between housing development and park areas. It has been designated for Open Space-Conservation and Waterway Protection in the Noosa Shire Strategic Plan: Eastern Beaches Locality.
- 7 Castaways Creek catchment (Education Queensland) contains heath and sedgeland important for the ground parrot and is continuous with the East Weyba section of the park. This land is designated for Open Space-Conservation and Waterway Protection in the Noosa Shire Strategic Plan: Eastern Beaches Locality.
- 8 Crown land west of the northern part of Peregian township (Education Queensland) conserves *Eucalypt/Casuarina* open forest and is a known habitat for koalas and glossy black cockatoos. This land is designated Open Space-Conservation and Waterway Protection in the Noosa Shire Strategic Plan: Eastern Beaches Locality.
- 9 Vacant Crown Land between Eumarella Road and West Weyba Section (Department of Natural Resources) conserves eucalypt woodland and has been designated for Conservation on the Maroochy Shire Council Strategic Plan 1996. In conjunction with land to the north of Eumarella Road which has been designated for protection in the Noosa Shire Strategic Plan, it provides a linkage from West Weyba section through to the Eenie Creek and North Weyba sections.
- 10 Marine and intertidal areas around Noosa Heads section (Department of Primary Industries and Noosa Council respectively).

Desired outcomes

- Conservation values on areas adjacent to the national park are protected.

Proposed guidelines and actions

- Assess the conservation value associated with the Coolum State High School and negotiate with Education Queensland with a view to establishing a voluntary co-operative conservation agreement.
- Liaise with Education Queensland on the potential for the western part of school site at Havana Road, which conserves tall open eucalypt forest near the Emu Swamp section, to become a nature refuge.
- Liaise with Noosa and Maroochy Shire Councils on appropriate provisions for protection of areas of conservation value under their jurisdiction.
- Investigate protected area status for managing the marine and intertidal areas around the Noosa Heads section.
- Continue negotiations with Noosa Council and the Department of Natural Resources on gazetting unallocated State land as a resource reserve and develop a management plan in accordance with the *Nature Conservation Act 1992* to govern its management.

Park neighbours

Background information

Park neighbours include the owners and managers of tourist accommodation developments, urban and rural residential properties and farms. Neighbours regularly visit the park areas for enjoyment. They also notify park staff of any unusual incidents that require attention.

Neighbourhoods can be responsible for undesirable impacts on the park which are of management concern.

- 1 Residential and development properties act as sources of non-native plants and native plants that do not naturally occur in the area (e.g. umbrella tree). Some residential gardens, such as those at the northern end of the Peregrin section, have encroached on park land while other local residents dump garden rubbish on the park edges, e.g. on the western edge of the Noosa Heads section.
- 2 The outflowing of stormwater and septic systems carries nutrients and pollutants on to park land. The heightened soil phosphorus content and damp conditions promote weed establishment and promote the growth of native plants better suited to higher nutrient and moisture levels, such as marginal rainforest species. This impact is clearly seen on the East Weyba section where aggressive species such as bulrush *Typha orientalis*, willow primrose *Ludwigia octovalvis*, pampas grass *Cortaderia selloana* and the ferns *Hypolepis muelleri* and *Histiopteris incisa* are taking over.
- 3 Domestic pets from residential areas can stray on to the park and kill or disturb native animals.
- 4 Local residents taking shortcuts through backyards on to park walking tracks create pathways which rapidly degrade and become defined tracks.
- 5 The local governments drain creeks for flood mitigation purposes and mosquito control.
- 6 Surrounding rural land is a source of weeds and domestic animals and can present a fire risk to the park. The increasing use of fertilisers, pesticides and herbicides on rural land also threatens the purity and natural integrity of water and air in the national park.

An issue related to the close proximity of the park sections to the urban environment is the control of mosquitoes in the park's wetter areas. The active control of biting insects is a local government responsibility but permission must be sought from the Regional Service Director of the Queensland Parks and Wildlife Service.

In national parks, pesticide use will be approved only in exceptional circumstances where it is essential to counter a serious health risk and no alternative measures exist. Runnelling and other habitat modification might be permitted under certain circumstances. No control measures will be permitted in any protected area if it is believed that rare or threatened species might be affected directly or indirectly.

Desired outcome

- Adjoining landholders and local communities are aware of and supportive of Queensland Parks and Wildlife Service management, particularly in relation to off-park activities that have an impact on the park.

Proposed guidelines and actions

- Provide local communities and neighbours with a species list of locally occurring plants suitable for their gardens, and provide advice on identification and removal of exotic species, particularly those listed in Appendix 3.
- Revegetate informal access tracks linking residential neighbourhoods to the park. Provide formal access where appropriate.
- Encourage local governments to fund a scientific specialist to write a report on the existing nutrient outflows from residential areas and their effects on the natural resources and groundwater.
- Form a discussion group with representatives from local governments and local conservation groups and specialists to report on solutions to nutrient and wastewater outflows (e.g. salt and chlorinated water from swimming pools) from residential areas adjacent to the park.
- Park staff to liaise with council Animal Control Officers about problems with domestic animals on the park.
- Continue to liaise with local governments on mosquito control on the park and stay abreast of research advances in the biological control of mosquitoes.
- Liaise with other government agencies, local governments and park neighbours regarding future developments on adjoining or nearby land which are likely to have an impact on the park's landscape and scenic values.
- Continue to submit formal advice to local governments on rezoning applications, town planning scheme amendments or proposed council policies and local laws which have consequences for park management.
- Monitor the air and water quality in the national park and in the drainage systems in surrounding land which enter the national park.

Community access and infrastructure

Background information

The growth of the urban and tourist spheres of the Sunshine Coast has created a demand for development of associated infrastructure including transport corridors. Road corridors impact on the surrounding landscape, fragmenting vegetation, increasing weed infestations and altering water tables.

The Sunshine Motorway was conceived to meet future traffic demands, providing a north-south road alternative to the David Low Way. The Motorway has diminished the need for the eastern section of Emu Mountain Road to remain open. This unsealed road runs through Emu Swamp and, once closed to traffic, can be rehabilitated. Other roads now obsolete as a result of the Motorway, such as the section of Monak Road on the south-east corner of the West Weyba section and the Leslie Drive road reserve, require local government approval for closure.

Woodland Drive is a gazetted road reserve through the East Weyba section of the park. Alternative sealed access to the coast for residents west of Murdering Creek now exists with Murdering Creek Road and Emu Mountain Road, which forms part of the Sunshine Motorway. Before making any decisions regarding the future of Woodland Drive, Noosa Council will conduct a traffic monitoring exercise to determine the actual level of use of the road. The Council is considering traffic calming options to reduce the speed and the risk of roadkills in the interim.

The Department of Transport has surveyed a route for a future local road with a 60km/h speed limit running through the East Weyba section and linking with the Sunshine Coast Motorway. Noosa Council has opposed the road and has designated it as Open Space-Conservation and Waterway Protection on their draft strategic plan (Noosa Council 1996).

Desired outcome

- Disturbance to national park areas resulting from construction and operation of roads is minimised.

Proposed guidelines and actions

- Liaise with Queensland Transport regarding:
 - the incorporation of the future local road through East Weyba into the park,
 - the design, construction and maintenance of roads adjacent to or through park areas including:
 - design of culverts, fences, embankments etc. to minimise impacts on native animal movement;
 - disposal of vegetation from the road location;
 - drainage patterns; and
 - disturbance to adjacent areas during the construction phase.
- Continue to liaise with Noosa Council on the use of Woodland Drive to minimise the destructive impacts of rubbish dumping, shooting wildlife and roadkills.
- Liaise with Noosa Council on incorporating the section of Leslie Drive running adjacent to the East Weyba section into the park.
- Liaise with Maroochy Shire Council on inclusion of the following roads into the park:
 - that part of Monak Road adjacent to the West Weyba section, and
 - the eastern section of Old Emu Mountain Road running through Emu Swamp.

4.5 Park management

Implementation of management plan

Background information

The park is managed from the office located at Noosa Heads. Managerial and support staff are located respectively at Maroochydore and Moggill. Park staff are responsible for day-to-day natural resource management including wildfire suppression, fire management, feral animal and weed control, administration, volunteer management, infrastructure development and maintenance, public contact and liaison, interpretation, education and research, and rescue.

At present, contractors are used for rubbish removal, toilet cleaning and tree lopping. Volunteer groups and neighbours are being relied upon to assist park management, particularly in relation to weed control and minimising other neighbourhood impacts.

The increased area of national park land has placed a demand on the present number of staff and work facilities to manage the park complex. Further issues involve park boundaries, fire management and landuse impacts as a result of the encroaching urban development.

An economic benefit study has been undertaken by The University of Queensland in 1997–98 to determine the value of Noosa National Park to surrounding tourist areas. Initial findings have determined that Noosa National Park contributes significantly to the local community through tourist expenditure and employment on the Sunshine Coast.

Desired outcome

- To have Noosa National Park managed effectively.

Proposed guidelines and actions

- Develop a plan implementation schedule which:
 - ties in with the business plan for the Service and the annual works programs for the park, and
 - considers the specialist expertise and seasonal requirements for staffing, training and monitoring.
- Conduct a review of the management plan within 10 years from approval as prescribed under s 125 of the *Nature Conservation Act 1992*.
- Review and evaluate the operation of Noosa National Park in relation to a location for a management base.
- Retain the existing workshop as a storage facility for equipment associated with Noosa Heads park management.
- Consider opportunities to:
 - optimise the use of contractors;
 - develop initiatives with tourism agencies and local governments; and
 - involve volunteers.

5 Bibliography

Arthington, A.H. and Marshall, C.J. (1993) Distribution, ecology and conservation of the Honey Blue-eye, *Pseudomugil mellis*, in south-eastern Queensland, Final Report to the Australian Nature Conservation Agency Endangered Species Program, Volume 1. Centre for Catchment and In-stream Research, Griffith University, Queensland.

Arthington, A.H. and Esdaile, J. (1993) Recovery plan for the endangered Oxleyan Pygmy Perch, *Nannoperca oxleyana*. Progress Report to the Queensland Department of Environment and Heritage. Recovery Plan Research Phase. Centre for Catchment and In-stream Research, Griffith University, Queensland.

Batianoff, G.N. (1987) *Plants of the Sunshine Coast Queensland (Noosa National Park to Mt. Coolum)*, Society for Growing Australian Plants (Qld. Region) Inc.

Batianoff, G.N. and Elsol, J.A. (1989) 'Vegetation of the Sunshine Coast æ Description and Management', *Queensland Botany Bulletin* 7. QDPI, Brisbane.

Brouwer, J. and Garnett, S. (eds.) (1990) Threatened birds of Australia. An annotated list. Royal Australasian Ornithologists Union Report Number 68.

Catterall, C.P. and Rishworth, C. (1993) Ecological planning study for the Marcus Beach Development Control Plan, Noosa Shire. A report prepared for Noosa Council by the Faculty of Environmental Sciences, Griffith University, Queensland.

Clancy, G.P. (1990) A report on the Ground parrot *Pezoporus wallicus wallicus* (Kerr) at Peregrian, southern Queensland. A report prepared for Environmental Studies Pty Ltd.

Coaldrake, J.E. (1961) The Ecosystem of the Coastal Lowlands ('Wallum') of Southern Queensland. Bulletin No. 283. Commonwealth Scientific and Industrial Organisation, Australia.

Department of Environment and Heritage. *Nature Conservation Act 1992. Nature Conservation (Wildlife) Regulation 1994.*

Department of Environment and Heritage (1994) Conservation Values of Lot 1451 Parish of Maroochy (D.BIRD Land, Coolum). Unpublished report.

Douglas, D.J. and Partners (1987) Report on Site Investigation: Proposed Carpark Noosa National Park.

Drake, W.E. (1995) Conservation Research Statement and Proposed Recovery Plan for *Eucalyptus conglomerata* (swamp stringybark), Myrtaceae. Unpublished report to the Australian Nature Conservation Agency.

Durrington, L.R. (1974) Vegetation of the Moreton Region. In Moreton Region Non-urban Land Suitability Study, Part 1. Technical Bulletin No. 11, Division of Land Utilisation, Queensland Department of Primary Industries, Brisbane.

Garnett, S. (1992) The Action Plan for Australian Birds. Australian National Parks and Wildlife Service Endangered Species Program. Project Number 121. Canberra.

Good, R.B. (1981) 'The role of fire in conservation reserves' in. Gill, Groves and Noble (eds.) *Fire and the Australian Biota*. Australian Academy of Science, Canberra. pp529-549.

Gubbi Gubbi Land and Cultural Association Inc. (1993) Statement of Murri Interests in the Great Sandy Region.

- Harris, M.J. and Webster, R.J. (1990) Selected Visitor Attributes: Noosa National Park. State Series 1. Internal Report of Queensland National Parks and Wildlife Service.
- Just, T.E. (1977) Fire control problems of the wallum with particular reference to Cooloola. Technical Paper No. 3. Department of Forestry, Queensland.
- Kinhill Cameron McNamara Pty Ltd (1991) Investigation of Caravan Parks, Relocatable Home Parks and Camping Opportunities.
- Kinhill Cameron McNamara Pty Ltd (1992) Lake Weyba Catchment Area Study. Environmental Report.
- Kinhill Cameron McNamara Pty Ltd (1992) Lake Weyba and Catchment Area Development Control Plan.
- Maroochy Shire Council. Maroochy Shire Strategic Plan 1996: A Strategy for Planned Development.
- McDonald, W.J.F. and Elsol, J.A. (1984) Moreton Region Vegetation Map Series. Summary Report and Species Checklist for Caloundra, Brisbane, Beenleigh and Murwillumbah Sheets. Queensland Department of Primary Industries.
- McFarland, D. (1989) The Ground parrot *Pezoporus wallicus wallicus* (Kerr) in Queensland: Habitat, Biology and Conservation. Report prepared for the Division of Conservation, Parks and Wildlife. Department of Environment and Conservation, Queensland.
- McQueen, R. (1991) Mt Coolum and Peregrine Beach Initial Cultural (Aboriginal) Assessment. Internal Memorandum, Department of Environment and Heritage.
- Noosa Council (1996) Noosa Shire Strategic Plan: Eastern Beach Locality. A Planning Scheme Review Project.
- Ogilvie, P. (1964) Fauna list for Noosa National Park.
- Queensland Department of Environment and Heritage (1993) Vegetation Mapping for the Noosa/Lake Weyba Area. Unpublished maps, Brisbane.
- Queensland Department of Environment and Heritage (1994) Conservation Significance of the Emu Mt Area. Unpublished report. Department of Environment and Heritage, Brisbane.
- Queensland Institute of Technology (1986) Interim Report on Lake Weyba and Environs æ Hydrological/Biological Aspects. Civil Engineering and Biology and Environmental Science Departments.
- Queensland Rural Lands Protection Board (1986) Categorisation of Declared Animals. Pestfact. An information bulletin of the Queensland Rural Land Protection Board.
- Queensland Rural Lands Protection Board (1990) The Declared Plants of Queensland. Pestfact. An information bulletin of the Queensland Rural Land Protection Board.
- Queensland National Parks and Wildlife Service (1979) *Exploring Noosa National Park*. National Parks and Wildlife Service, Queensland.
- Resource Assessment Commission (RAC) (1992) Coastal Zone Inquiry Draft Report. Australian Government Publishing Service, Canberra.
- Sandercoe, C.S. (1991) *Blandfordia grandiflora* R. Br. (Christmas Bell) in Queensland – a distribution survey. Proceedings of the Royal Society of Queensland 101: 119-123.

Smith, N. (1996) Noosa National Park Study on the Relationship between the Flatid *Jamella australiae* and Dieback in *Pandanus tectorius* var. *pedunculatus*. Industrial Placement Final Report.

Stanley, T.D. and Ross, E.M. (1983) *Flora of south-eastern Queensland*. Volumes 1-3. Queensland Department of Primary Industries Miscellaneous Publication 81020.

Thomas, M.B. and McDonald, W.J.F. (1989) *Rare and threatened plants of Queensland* (2nd edition). QDPI Information Series QI 88011.

Turnbull, M.H. and Olsen, M.F. (1992) *Vegetation Survey and Assessment of Landscapes within the Boundaries of the Maroochy Shire*. Botany Department, University of Queensland.

Key to Appendices 1 and 2

Distribution within Noosa National Park

- 1 Noosa Heads section
- 2 Weyba Link section
- 3 East Weyba section
- 4 West Weyba section
- 5 Emu Swamp section
- 6 Peregian section
- 7 Coolum section
- 8 North Weyba section

Conservation status codes (from *Nature Conservation [Wildlife] Regulation 1994*)

- E Endangered species at serious risk of disappearing from the wild state within 10 to 20 years if present land use and other causal factors continue to operate.
- V Vulnerable species not presently endangered but at risk over a long period through continued depletion, or which largely occur on sites likely to experience changes in landuse which would threaten the survival of the species in the wild.
- R Species which are rare in Australia, but not currently considered endangered or vulnerable. Such species may be represented by a relatively large population in a relatively restricted area or by smaller populations spread over a wider range or some intermediate combination of distribution patterns.
- S Common species of special cultural significance.

JAMBA Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment, signed at Tokyo on 6 February 1974.

CAMBA Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment, signed at Canberra on 20 October 1986.

L Species of local conservation significance recorded on the park

- SL Southern limit of distribution
- NL Northern limit of distribution

Appendix 1 Noteworthy plants in Noosa National Park

FAMILY/Scientific name	Common name	Locality	Conservation status
PTERIDOPHYTES			
ASPLENIACEAE			
<i>Asplenium difforme</i>	shore asplenium	1	NL
GYMNOSPERMS			
CUPRESSACEAE			
<i>Callitris columellaris</i>	white cypress pine	1, 3, 5	L
DICOTYLEDONS			
AIZOACEAE			
<i>Macarthuria complanata</i>		1, 2, 3	R
APOCYNACEAE			
<i>Alyxia ilicifolia</i> subsp. <i>magnifolia</i>	large-leaf chainfruit	1	R
CASUARINACEAE			
<i>Allocasuarina littoralis</i> (Polyploid)		1, 3	L
<i>Allocasuarina emuina</i>		5, 7	E
FABACEAE			
<i>Glycine argyrea</i>		1	R
LAMIACEAE			
<i>Westringia tenuicaulis</i>		1, 3, 4, 5, 6	SL
LAURACEAE			
<i>Cryptocarya foetida</i>	stinking cryptocarya	1	V
MIMOSACEAE			
<i>Acacia attenuata</i>		1	V
<i>Acacia baueri</i> subsp. <i>baueri</i>	tiny wattle	3, 5	V
<i>Acacia leiocalyx</i> subsp. <i>herveyensis</i>		1, 3	SL
MYRTACEAE			
<i>Eucalyptus conglomerata</i>	swamp stringybark	7	E
SYMPLOCACEAE			
<i>Symplocos harroldii</i>		1	R
MONOCOTYLEDONS			
CYPERACEAE			
<i>Schoenus scabripes</i>		1, 2, 3, 5	R
LILIACEAE			
<i>Blandfordia grandiflora</i>	Christmas bells	1, 2, 3, 5	R
ORCHIDACEAE			
<i>Bulbophyllum globuliforme</i>		1	V
<i>Genoplesium rufum</i>		1	L
<i>Phaius australis</i>		3	E
<i>Phaius tancarvilleae</i>	swamp orchid	1, 3	E
<i>Prasophyllum wallum</i>		6	V
POACEAE			
<i>Arthraxon hispidus</i>		1	V

Appendix 2 Noteworthy animals in Noosa National Park

FAMILY/Scientific name	Common name	Locality	Conservation status
Amphibians			
MYOBATRACHIDAE			
<i>Crinia tinnula</i>	wallum froglet	3, 6	V
HYLIDAE			
<i>Litoria cooloolensis</i>	Cooloola sedgefrog	3	R
<i>Litoria freycineti</i>	wallum rocketfrog	3	V
<i>Litoria olongburensis</i>	wallum sedgefrog	3, 6	V
Reptiles			
SCINCIDAE			
<i>Ctenotus arcanus</i>		3, 4, 6	L
Birds			
ARDEIDAE			
<i>Egretta alba</i>	great egret	1	S (JAMBA, CAMBA)
ACCIPITRIDAE			
<i>Erythrotriorchis radiatus</i>	red goshawk	1	E
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	1	S (CAMBA)
BURHINIDAE			
<i>Esacus magnirostris</i>	beach thick-knee	1	V
ROSTRATULIDAE			
<i>Rostratula benghalensis</i>	painted snipe	1	R, S(JAMBA)
CHARADRIIDAE			
<i>Charadrius mongolus</i>	Mongolian plover	1	S (JAMBA, CAMBA)
<i>Pluvialis dominica</i>	lesser golden plover	1, 3	S (JAMBA, CAMBA)
SCOLOPACIDAE			
<i>Calidris acuminata</i>	sharp-tailed sandpiper	1	S (JAMBA, CAMBA)
<i>Calidris canutus</i>	red knot	1	S (JAMBA, CAMBA)
<i>Calidris ferruginea</i>	curlew sandpiper	1, 3	S (JAMBA, CAMBA)
<i>Calidris ruficollis</i>	red-necked stint	1, 3	S (JAMBA, CAMBA)
<i>Gallinago hardwickii</i>	Latham's snipe	1	S (JAMBA, CAMBA)
<i>Limosa lapponica</i>	bar-tailed godwit	1	S (JAMBA, CAMBA)
<i>Numenius madagascariensis</i>	eastern curlew	1	R, S(JAMBA,CAMBA)
<i>Numenius phaeopus</i>	whimbrel	1	S (JAMBA, CAMBA)
<i>Tringa brevipes</i>	grey-tailed tattler	1	S (JAMBA, CAMBA)
<i>Tringa hypoleucos</i>	common sandpiper	1	S (JAMBA, CAMBA)
<i>Tringa nebularia</i>	greenshank	1, 3	S (JAMBA, CAMBA)
<i>Tringa stagnatilis</i>	marsh sandpiper	1, 3	S (JAMBA, CAMBA)
<i>Tringa terek</i>	terek sandpiper	1	S (JAMBA, CAMBA)
LARIDAE			
<i>Chlidonias leucoptera</i>	white-winged tern	1	S (JAMBA, CAMBA)
<i>Hydroprogne caspia</i>	Caspian tern	1	S (JAMBA, CAMBA)
<i>Sterna albifrons</i>	little tern	1	V, S(JAMBA,CAMBA)
CACATUIDAE			
<i>Calyptorhynchus lathami</i>	glossy-black cockatoo	1, 3, 4	V
PLATYCERCIDAE			
<i>Pezoporus wallicus</i>	ground parrot	2, 3, 5, 7	V
TYTONIDAE			
<i>Tyto longimembris</i>	eastern grass owl	3, 4	L
APODIDAE			
<i>Apus pacificus</i>	fork-tailed swift	1	S (JAMBA, CAMBA)

FAMILY/Scientific name	Common name	Locality	Conservation status
MEROPIDAE <i>Merops ornatus</i>	rainbow bee-eater	1-3, 5, 8	S (JAMBA, CAMBA)
Mammals			
TACHYGLOSSIDAE <i>Tachyglossus aculeatus</i>	short-beaked echidna	1, 3	S
DASYURIDAE <i>Phascogale tapoatafa</i>	brush-tailed phascogale	3, 6	L
PHASCOLARCTIDAE <i>Phascolarctos cinereus</i>	koala	1	S
Fish			
NANNIPERCIDAE <i>Nannoperca oxleyana</i>	Oxleyan pygmy perch	3	V
PSEUDOMUGILIDAE <i>Pseudomugil mellis</i>	honey blue-eye	3	V

Appendix 3 Weed species list

These exotic plant species present in areas surrounding Noosa National Park have detrimental impacts on natural vegetation and are not recommended for planting or use in gardens etc.

Dispersal means

- 1 attractive fleshy edible fruits or seeds dispersed by animals
- 2 winged or plumed wind-dispersed seeds
- 3 prolific seeders and germinators
- 4 vegetative reproducers (stems, tubers, leaves etc.), dispersed by gravity or water action (after P. Grimshaw, QDEH)

FAMILY/Scientific name	Common name	Place of origin	Dispersal means
GYMNOSPERMS			
PINACEAE			
<i>Pinus elliottii</i>	slash pine	Central America	1, 3
DICOTYLEDONS			
ANARCADIACEAE			
<i>Schinus terebinthifolia</i>	broad-leaved pepperina	Brazil, Paraguay	1
APOCYNACEAE			
<i>Catharanthus roseus</i>	pink periwinkle	Madagascar	3
ARALIACEAE			
<i>Schefflera actinophylla</i>	umbrella tree	North Queensland	1
ASTERACEAE			
<i>Tithonia diversifolia</i>	Japanese sunflower	Central America	2
<i>Wedelia trilobata</i>	Singapore daisy	West Indies, South America	4
BASSELLACEAE			
<i>Anredera cordifolia</i>	madeira vine	South America	4
BIGNONIACEAE			
<i>Macfadyena unguis-cati</i>	cats claw creeper	Tropical America	2
BUDDLEJACEAE			
<i>Buddleja madagascariensis</i>	buddleia	Madagascar	4
CAESALPINIACEAE			
<i>Cassia coluteoides</i>	Easter cassia	Tropical America	1
CAPRIFOLIACEAE			
<i>Lonicera japonica</i>	Japanese honeysuckle	Japan	4
CONVOLVULACEAE			
<i>Ipomea cairica</i>	mile-a-minute	Africa, Asia	4
<i>Ipomea indica</i>	blue morning glory	America	4
CRASSULACEAE			
<i>Bryophyllum tubiflorum</i>	mother of millions	Madagascar, Africa	3, 4
EUPHORBIACEAE			
<i>Euphorbia cyathophora</i>	dwarf poinsettia	Tropical America	4
LAMIACEAE			
<i>Salvia coccinea</i>	salvia	Southern USA	4
LAURACEAE			
<i>Cinnamomum camphora</i>	camphor laurel	Japan, Taiwan	1
OCHNACEAE			
<i>Ochna serrulata</i>	ochna	South Africa	1
OLEACEAE			
<i>Ligustrum lucidum</i>	broadleaf privet	China, Japan	1
<i>Ligustrum sinensis</i>	small-leaf privet	China	1

FAMILY/Scientific name	Common name	Place of origin	Dispersal means
PASSIFLORACEAE			
<i>Passiflora suberosa</i>	corky passion vine	Tropical America	1
ROSACEAE			
<i>Rhaphiolepis indica</i>	Indian hawthorn	East Asia	1
SAPINDACEAE			
<i>Cardiospermum halicacabum</i>	balloon vine	Asia, Africa, America	2
<i>Koelreuteria elegans</i>	golden rain tree	South Pacific	2
THUNBERGIACEAE			
<i>Thunbergia alata</i>	black-eyed susan	Tropical Africa	4
ULMACEAE			
<i>Celtis sinensis</i>	Chinese celtis	China, Japan	1
VERBENACEAE			
<i>Lantana camara</i>	lantana	South America, West Indies	1
MONOCOTYLEDONS			
AGAVACEAE			
<i>Sansevieria trifasciata</i>	mother-in-laws tongue	Africa	4
ARECACEAE			
<i>Syagrus romanzoffiana</i>	Cocos palm	Brazil	1
CANNACEAE			
<i>Canna</i> sp.	canna lily	South America	4
COMMELINACEAE			
<i>Callisia fragrans</i>	purple succulent	Mexico	4
<i>Tradescantia albiflora</i>	wandering jew	South America	4
LILIACEAE			
<i>Gloriosa superba</i>	glory lily	Tropical Asia and Africa	4
<i>Protasparagus densiflorus</i>	asparagus fern	South Africa	1, 4
<i>Protasparagus plumosus</i>	climbing asparagus fern	South Africa	1, 4
POACEAE			
<i>Cortaderia selloana</i>	pampas grass	South America	2
<i>Setaria sphacelata</i> var. <i>sericea</i>	setaria	Africa	4

Appendix 4 Zoning maps

Explanatory notes, Maps 2 and 3

The overall zoning concepts have been discussed in the Recreation section. Detailed explanations of the four zones are presented to accompany the maps. Within these zones, specific criteria to follow regarding access, activities and development are outlined under zoning prescriptions.

INTENSIVE RECREATION ZONE

This zone covers the major access point to the Noosa Heads section of the park including the very highly used areas of the picnic ground, carpark and information centre.

In order to accommodate the large numbers of visitors to this section the main entrance area will retain modern day-visitor facilities and picnic opportunities. Permanent Ranger presence occurs at Noosa Heads.

Zoning prescriptions:

- The extent of the carpark/picnic ground at Noosa Heads will not be expanded.
- Resurfacing and other works permissible in the carpark.
- Development of a new toilet block to cater for the disabled at Noosa Heads only.

CONSERVATION AND RECREATION ZONE

This is designated over well-used recreational areas which have been given a 25-metre buffer. It will be maintained primarily to provide a recreational experience for larger numbers of people and includes:

- the Coast track extending to Dolphin Point,
- the Palm Grove rainforest walk leading off the main picnic ground, and
- the high dune areas at either end of Alexandria Bay.

Zoning prescriptions:

- Hardening of tracks will occur only as far as the Dolphin Point area.
- Dolphin Point is to have a low-key interpretation display and erosion control management.
- Duplicate tracks not required for management purposes will be closed and revegetated.
- Recreational infrastructure may include boardwalks and viewing platforms for conservation and interpretation purposes, and a toilet.

CONSERVATION ZONE

This zone covers the larger part of the Noosa Heads section and all of the Peregrian, West Weyba, North Weyba, Coolum, Eenie Creek, Marcus Beach and Weyba Island sections.

The future park inclusions of Emu Mountain and land between Cooyar Street and the Weyba Link section would be included in this zone.

Zoning prescriptions:

- The naturalness of the landscapes covered by this zone will not be compromised by recreation. Visitor safety is a management concern and infrastructure development will only be undertaken to minimise risks to visitors.
- Realignment and definition of walking trails at Hells Gates and Devils Kitchen to steer people away from cliff edges.
- Access paths to Fairy Pools and Oyster Rocks will be made safe using rough steps.
- Facilities such as boardwalks or viewing platforms may only be built to manage erosion impacts.
- There will be no further extension of the boardwalk or any other recreational infrastructure development at the Peregrian section, except for erosion control on the dune areas.

- 4WD access will be provided for management purposes only.
- Gates will be provided to restrict vehicular access to management vehicles only.
- Areas may be used for educational field programs.
- McAnally Drive access track infrastructure development will be for conservation purposes only and specifically for erosion control.

SPECIAL PROTECTION ZONE

The areas to be managed under this special protection zone have been identified to maintain their high conservation significance undisturbed by human activities. The conservation values are based mainly on the vegetation communities and ecosystems they function in, as well as the rare or threatened native plants and animals present. More specifically, this zone includes:

- all of the *Caustis-Empodisma* heathland and *Baumea* sedgeland in the East Weyba and Emu Swamp areas which is the habitat for the ground parrot;
- the coastal subtropical rainforest growing on sand at Noosa Heads;
- areas containing rare or threatened plant species at Lake Weyba;
- the high dune heath at Noosa Heads; and
- the Marcus Shores area if it becomes part of the park.

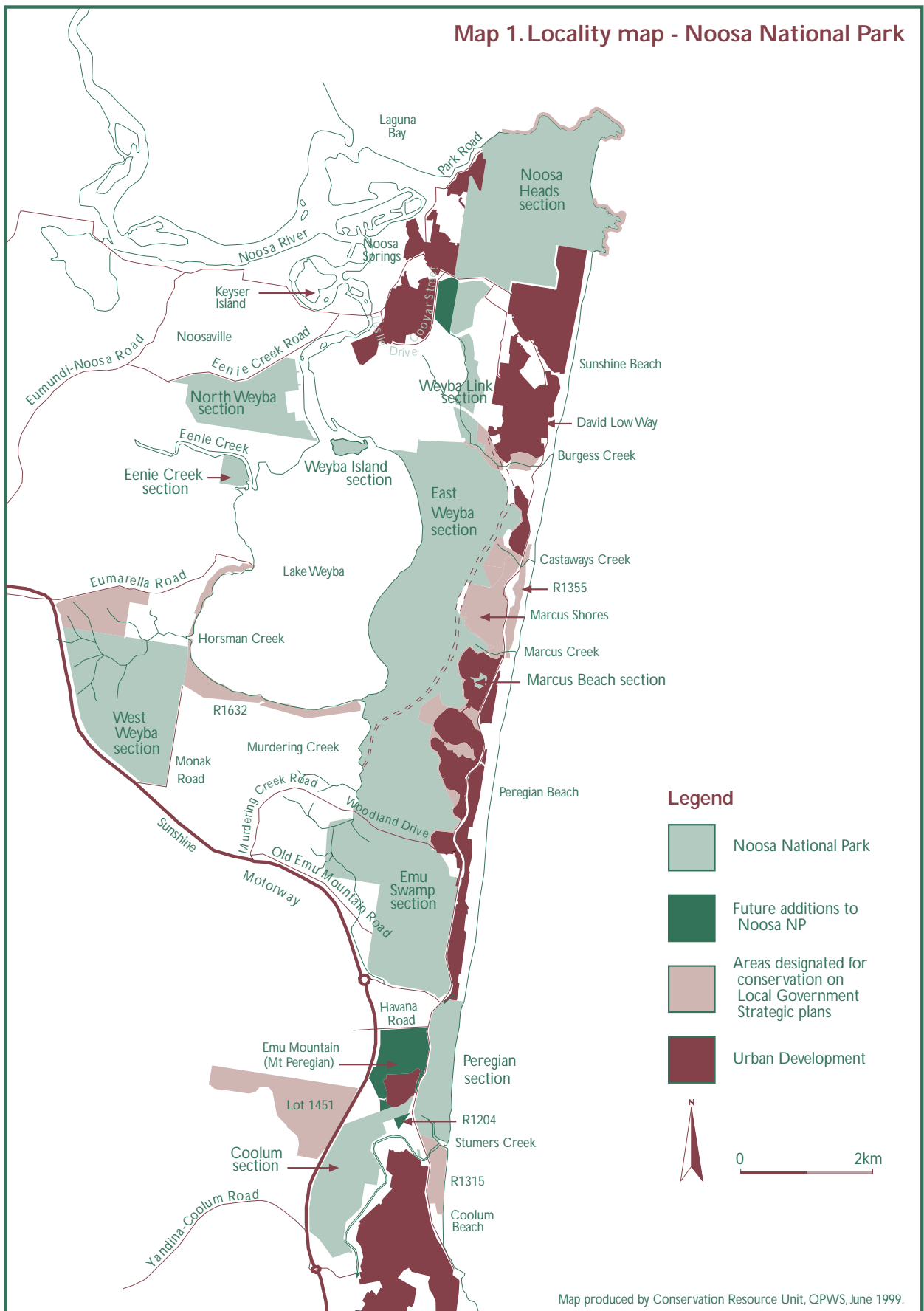
The Recreation Reserve R1204 at Coolum to be gazetted as part of the park will be included in this zone.

Zoning prescriptions

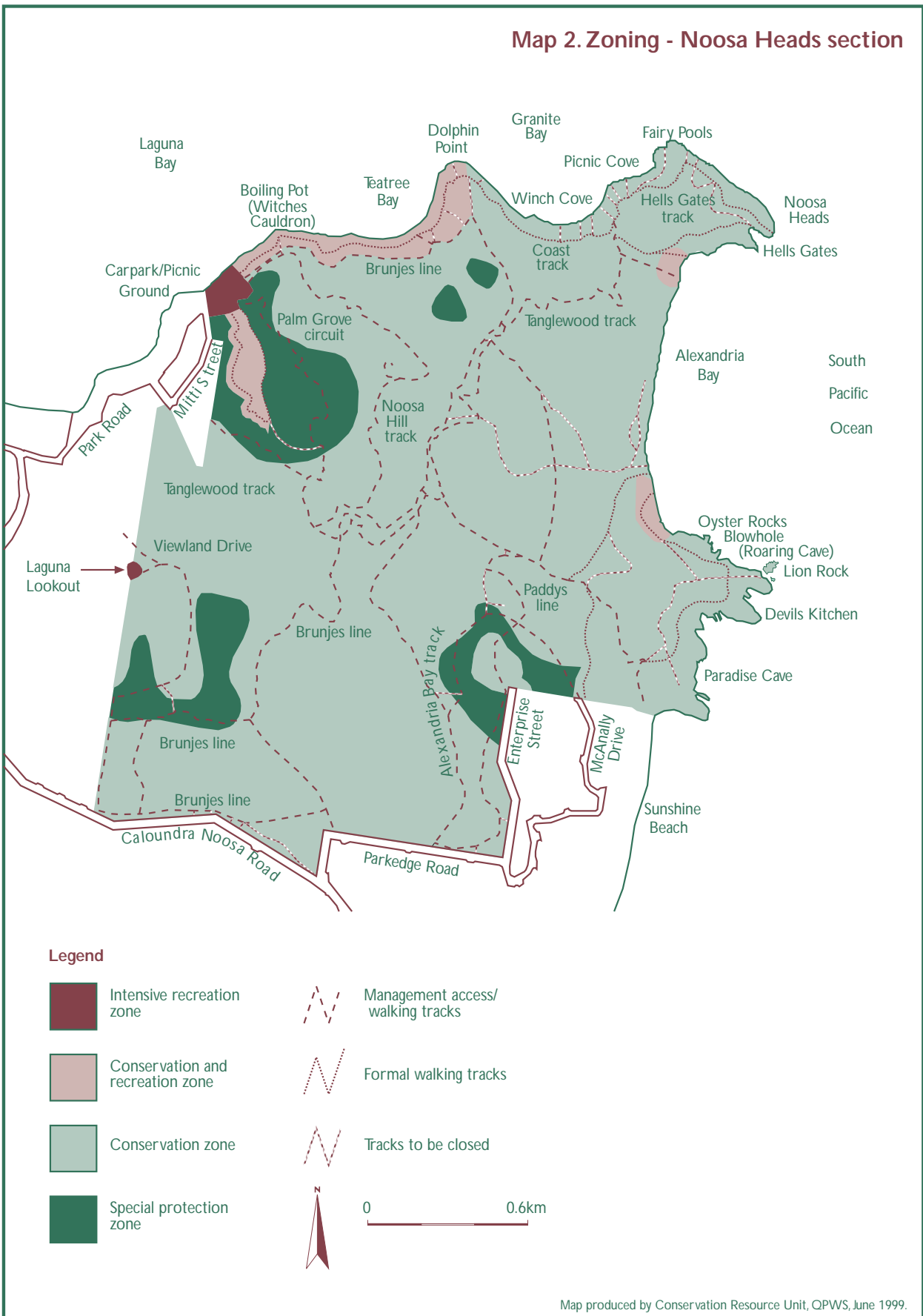
In relation to the East Weyba section:

- public access will be restricted to designated tracks only;
- no further recreational or management infrastructure will be developed; and
- visitor safety signs may be placed in appropriate locations on the track system.

Map 1. Locality map - Noosa National Park



Map 2. Zoning - Noosa Heads section



Map 3. Zoning - Weyba/Peregian/Coolum sections

