

# Ningaloo Marine Park

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Management Plan

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1989 – 1999

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MANAGEMENT PLAN No. 12



Department of Conservation  
and Land Management

**PARKS AND RESERVES  
OF THE CAPE RANGE PENINSULA**

**PART 2**

**NINGALOO MARINE PARK**  
(STATE WATERS)  
**MANAGEMENT PLAN**  
1989 — 1999

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## PREFACE

This document is the second of three management plans dealing with reserves in the vicinity of the Cape Range Peninsula: Cape Range National Park; Ningaloo Marine Park; and two areas of coastal land adjacent to the Ningaloo Marine Park at the northern end of the peninsula which have been reserved for Recreation and Coastal Management.

The two Parks are vested in the National Parks and Nature Conservation Authority (NPNCA). The coastal reserves are jointly vested in the Executive Director of the Department of Conservation and Land Management (CALM) and the Shire of Exmouth. The three areas are to be managed as an integrated unit.

A management plan is in place for Cape Range National Park and was approved by the Minister for Conservation and Land Management on 1 December, 1987.

This plan deals only with those parts of the Ningaloo Marine Park which lie within State waters. A management plan is to be prepared by the Australian National Parks and Wildlife Service which will deal with the offshore areas which lie in Commonwealth waters.

The NPNCA is a controlling body established under the CALM Act 1984. It is responsible for the preparation of proposed plans of management for all land and waters vested in it. Plans are prepared by, and implemented through, CALM. Draft plans undergo a minimum period of two months public scrutiny before review by the NPNCA and then to the Minister for final approval.

A draft version of this Plan was released for public comment on 28 May, 1988. A summary of public submissions is published as a separate document.

This plan of management was approved by the Hon. Minister for Conservation and Land Management, Mr I F Taylor MLA, on 12 October 1989.



PART 1.  
**BACKGROUND**

# 1. INTRODUCTION

The Ningaloo Reef is a fringing barrier coral reef enclosing a shallow lagoon on the western side of the Cape Range Peninsula some 1200 km north of Perth. In order to protect the high conservation values of this coral reef system, and to enhance recreational use of its resources, the area has been reserved as the Ningaloo Marine Park.

Ningaloo Marine Park encompasses both Commonwealth and State waters and the respective parts have been declared under Commonwealth and State legislation. Both the Commonwealth and State components are to be managed as a single unit by the State through the Department of Conservation and Land Management.

The Commonwealth component comprises that outer portion of the Park which lies seaward of the State territorial waters.

This document deals with the State component which contains both the State territorial waters and a strip of coastal land reserved for Marine Park adjacent to Ningaloo, Cardabia and Warroora Pastoral Stations.

Other land adjacent to the Marine Park includes the Cape Range National Park, two coastal reserves jointly managed with the Shire of Exmouth, Crown land leased for pastoral use, Commonwealth Defence land, and two small townsite areas.

The Ningaloo Marine Park, the Cape Range National Park and the coastal reserves will be managed as one integrated unit but each area will have its own management plan. A management plan for Cape Range National Park was approved by the Minister for Conservation and Land Management on 1 December 1987. Future management of the coastal areas of the other tenures is under discussion.

Although separate management plans will be prepared for the State and Commonwealth components of the marine waters of the Park, and independently approved by the respective State and Commonwealth Authorities, it is intended that the two plans will eventually be considered as one document.

## 1.1 PRINCIPLES OF MANAGEMENT

The principal aim of the Park is to provide for conservation of the marine environment with recreational use to the extent that it is compatible with conservation of its natural environment.

Management in the Park is aimed at conserving all of the wildlife and other features whilst providing opportunities for a variety of uses and activities, but controlled to a level where all animal or plant life is not adversely affected. To avoid conflict between those who fish and those who wish to enjoy marine wildlife free from exploitation, an objective of management is to provide areas of the Park free from fishing. Another management objective is to promote an appreciation and understanding of the marine environment by providing information, and guidance and by conducting interpretation programmes.

The principal dilemma of management is where to strike a balance between using and exploiting the natural resources of the Park, and conserving the very values which make the Park attractive to use; it is difficult to provide for the wishes of all of the community. Inevitably some uses cannot be provided for if

potential conflict with other uses is to be avoided.

This in turn is directly associated with the ability of management to be able to meet community expectations for the provision of services and facilities, within the reality of limited resources.

## 2. HISTORY OF THE MARINE PARK

The Conservation Through Reserves Committee (CTRC 1974) first proposed a reserve to protect the Ningaloo Reef tract, in its report and recommendations for establishment and management of conservation reserves in Western Australia to the Environmental Protection Authority (EPA). After public comment the C.T.R.C. report and recommendations were reviewed by the EPA (EPA 1975) which then made its recommendations to State Cabinet. At that time there was no legislation to enable the creation of aquatic "National Parks", although the Fisheries Act had been amended in 1974 to empower the Governor to set aside aquatic reserves within State territorial waters.

In 1978 the National Parks Authority convened a Working Group to formulate draft management proposals for the proposed Ningaloo Marine Park. The Working Group reviewed the EPA recommendations for the proposed marine reserve and made recommendations for a much larger area to be reserved, by incorporating additional information on resources, visitor use and management practices .

Draft management proposals were formulated on the basis that a management plan would be prepared by the agency with eventual responsibility for management of the Park. A key recommendation in the Working Group's report was the integration of coastal and marine environments as one management unit. Another was the incorporation of Commonwealth waters as a joint proposal for a marine park.

The Report of the Marine Park Working Group (May *et al* 1983) was released for public comment for three months in late 1983 by the Minister for Environment and the Minister for Fisheries. After reviewing the public submissions and the Report, the EPA made its recommendations to State Cabinet in late 1984 but requested that certain aspects be reviewed, in particular management zoning. Cabinet endorsed those recommendations in principle in early 1985. Arrangements for joint declaration and management based on the boundaries proposed in 1983, received the agreement in principle of the Prime Minister and the Premier in 1985.

In March 1985, the Forest Department, the National Parks Authority and the wildlife section of the Department of Fisheries and Wildlife were amalgamated into the Department of Conservation and Land Management (CALM). The *Conservation and Land Management Act* 1984 provides for the establishment of conservation reserves in the marine environment so that a statutory basis for reservation of the marine reserve was available for the first time, with the National Parks and Nature Conservation Authority (NPNCA) the controlling body and CALM the management agency.

The Ningaloo Marine Park Advisory Committee was appointed by the Minister for Conservation and Land Management in 1985, with a brief to assist in the preparation of a management plan which would guide CALM in development of the marine park in the early years of its operation. The committee has assisted in the preparation of this document.

### 3. STATE AND COMMONWEALTH AREAS

#### 3.1 MARINE

On the 3 April 1987, the Ningaloo Marine Park (State waters) encompassing an area of about 224,000 ha, was gazetted as Marine Park Reserve No. 2 and vested in the NPNCA under provisions of the *State Conservation and Land Management Act 1984* (Fig. 1). The name Ningaloo Marine Park, was gazetted on 18 December 1987.

The Ningaloo Marine Park (Commonwealth waters) was gazetted under the Commonwealth *National Parks and Wildlife Conservation Act 1975* on 20 May 1987. Three portions of Commonwealth waters (totalling about 700 square kilometres) recommended for declaration as Marine Park were subject to petroleum leases at the time of gazettal and were not included in the Park (Fig. 1). The areas covered by petroleum leases could not be reserved in accordance with the requirements of the Act. However, the petroleum lease in the northern area of the Park has since been relinquished and can now be added to the existing area of the Park in accordance with the procedures set down in the Commonwealth Act.

The total area of waters encompassed in the Park in both State and Commonwealth components is approximately 4300 square kilometers as of May 1989.

#### 3.2 COASTAL

A strip of land extending 40 metres above High Water Mark (HWM) between Winderabandi Point and Amherst Point (adjacent to Ningaloo, Cardabia and Warroora Pastoral Stations) was reserved under the *Land Act 1933*. Reserve No. 40079 is described on Reserve Plan No. 277 and encompasses an area of about 560 ha. It was gazetted for the purpose of Marine Park and vested in the NPNCA on 3 July 1987 (Fig. 2).

Thus, the area known as the Ningaloo Marine Park includes the waters and land described above.

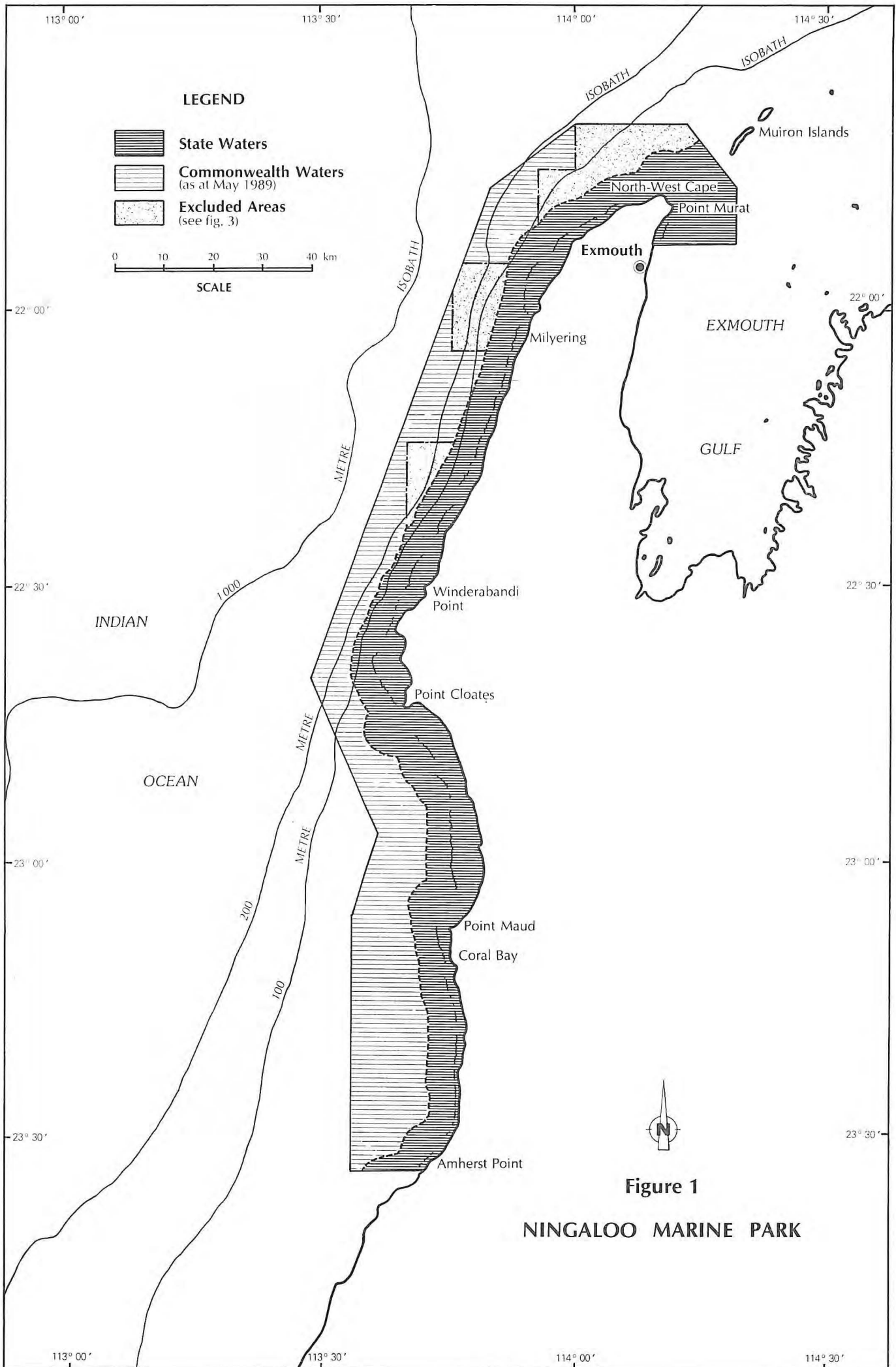
### 4. LEGISLATIVE AND ADMINISTRATIVE ARRANGEMENTS

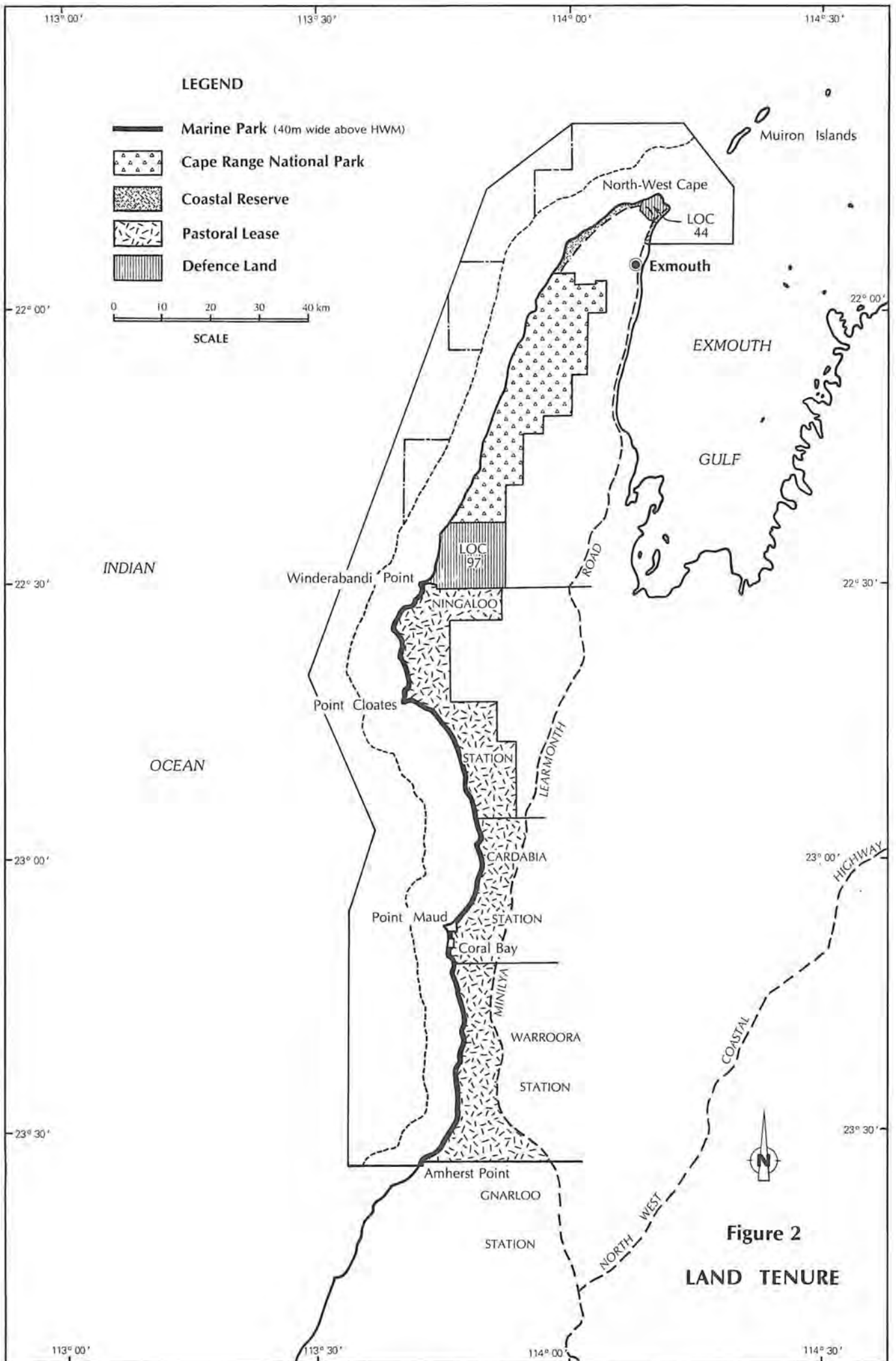
#### 4.1 ESTABLISHMENT OF THE PARK

The Park has been established as two contiguous components by the State with the *Conservation and Land Management Act 1984* and the Commonwealth using the *National Parks and Wildlife Conservation Act 1974*. However, the Park will be managed by the State as one unit under an agreement between CALM and the Australian National Parks and Wildlife Service (ANPWS) provided for under the Offshore Constitutional Settlement (OCS) arrangements and the *Sea and Submerged Lands Act 1973*.

#### 4.2 RECREATIONAL MANAGEMENT OF PASTORAL LAND

This plan proposes that recreational use of the coastal areas of pastoral leases adjacent to the Park would be managed by CALM under agreements provided for in Section 16 of the CALM Act.





#### 4.3 FISHERIES MANAGEMENT

Fisheries management arrangements between the Commonwealth and States under the OCS provide for management of some but not all fisheries by the State on the continental shelf from the shoreline to the 200 metre isobath. Pelagic fisheries are principally managed under Commonwealth legislation outside State Territorial waters. Fishing in the Marine Park will be managed under the Western Australia *Fisheries Act 1905* and the Commonwealth *Fisheries Act 1952*, by the W.A. Fisheries Department and the Australian Fisheries Service in collaboration with the Department of Conservation and Land Management.

#### 4.4 MARINE JURISDICTION

The *Coastal Waters (States Powers) Act 1980* and *Coastal Water (States Titles) Act 1980* vest in the State, power over and title to, the three mile territorial sea as well as the internal waters on the landward side of baselines of the territorial sea defined in the Commonwealth *Seas and Submerged Lands Act 1973* and subsequent amendments. The territorial sea baselines were re-defined in 1983 in accordance with the provisions of Articles 4 and 7 of the Convention on the Territorial Sea and the Contiguous Zone. The CALM Act is the principal Act for establishment and overall management of State waters in the Park.

#### 4.5 SHIPWRECKS

The Commonwealth *Historic Shipwrecks Act 1976*, and the State *Maritime Archaeology Act 1973* provide protection for shipwrecks in the Park. The Commonwealth Act provides protection for all wrecks regardless of age and requires any person discovering a wreck to notify the Western Australian Museum. If required, protected zones may be declared around an historic shipwreck to prevent unauthorized access.

#### 4.6 PETROLEUM

The Commonwealth *Petroleum (Submerged Land) Act 1967* provides for shared control and royalties between the Commonwealth and State for exploiting offshore petroleum resources. The State *Petroleum (Submerged Lands) Act 1982* allows petroleum permits to be granted in the State Territorial sea. The State *Petroleum Act 1967* provides for the granting of petroleum permits on land and internal waters. The CALM Act does not derogate the operations of the *Petroleum (Submerged Lands) Act 1982* or the *Petroleum Act 1967*.

The Commonwealth *Sea and Submerged Lands Act 1973*, establishes Commonwealth jurisdiction over the continental shelf and provides for the control of minerals other than petroleum.

#### 4.7 OTHER STATE LEGISLATION

Other State legislation which affects management of the Park includes the *Land Act 1933*, the *Wildlife Conservation Act 1950*, the *Marine and Harbours Act 1981* and the *Aboriginal Heritage Act 1972*.

#### 4.8 INTERNATIONAL TREATIES

International treaties signed by the Commonwealth Government which may have relevance to management of the Park are; The Convention on International Trade in Endangered Species; the Japan-Australia Migratory Birds Agreement; and the China - Australia Migratory Birds Agreement.

## 5. TENURE

### 5.1 MARINE

#### 5.1.1 Ningaloo Marine Park

The marine waters of the Park are contained in the reserves established under State and Commonwealth Acts described in Section 3. The Park extends from HWM, except in the case of Commonwealth Defence land at the head of the Cape, where the Park begins at LWM, to geographical co-ordinates approximately 10 nautical miles offshore, and spans approximately 260 kilometres of coastline from Bundegi Reef in Exmouth Gulf, around the Cape and south to Amherst Point (Fig. 1). The Park therefore includes waters in Exmouth Gulf, protected lagoon waters inside the Reef and deep oceanic waters.

#### 5.1.2 Defence Prohibited Area

A small area of the Park at Point Murat encompassing the naval jetty and surrounding waters has been declared a Prohibited Area under the *Defence (Special Undertakings) Act*.

#### 5.1.3 Petroleum Permits

Offshore permits may be granted under the Commonwealth *Petroleum (Submerged Lands) Act* 1967 and the State *Petroleum (Submerged Lands) Act* 1982 and onshore permits under the *Petroleum Act* 1967. They are administered by the State Department of Mines. Permits have been granted under the State Acts and affect portions of the marine waters declared under the CALM Act (Fig. 3).

Environmental conditions pertaining to those permits have been established by the Environmental Protection Authority and have been adopted by the Petroleum industry.

Commonwealth waters subject to existing permits have not been incorporated into the Park as the *National Parks and Wildlife Conservation Act* 1975 does not enable declaration of a reserve where there is a pre-existing interest (Fig. 3) (see also 3.1).

#### 5.1.4 Implications for Management

\* Management of the State waters within the Park should be consistent with management of the offshore Commonwealth waters, subject to a State-Commonwealth management agreement.

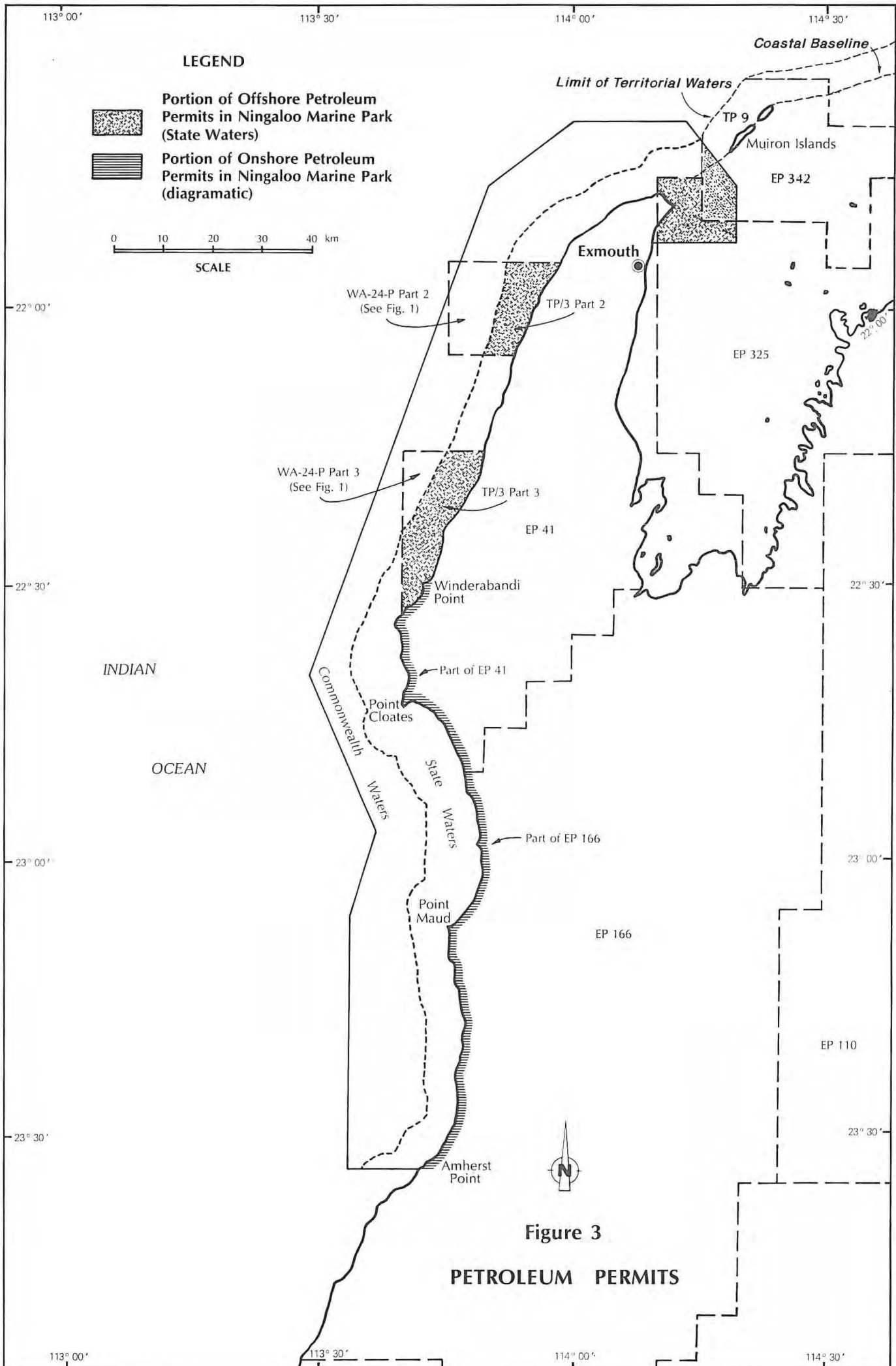
\* Management of the waters near Point Murat will need to take account of the Prohibited area around the Naval jetty. Liaison with the Deputy Commander of the Joint Naval Defence facility at Harold E. Holt base will assist in achieving compatible management objectives.

\* Liaison between the Department of Mines, the petroleum industry and CALM on the issue of petroleum exploration in the Park (as a whole) must continue, to ensure that the industry accommodates Park management objectives and that CALM is conversant with exploration objectives and operations.

\* Management of the Marine Park must take account of adjacent land uses as these will influence the patterns of use on the water.

\* Management of land and water must be integrated to the greatest extent possible.





\* Although CALM will be responsible for overall management of the Park, recreational and commercial fisheries will be managed under the Fisheries Act and boating activities will be subject to Marine and Harbours regulations in consultation with CALM. There must be effective liaison between the three State Government Departments involved to ensure coordination of management activities.

## 5.2 COASTAL

### 5.2.1 Ningaloo Marine Park

A strip of land 40 metres wide above HWM between the marine reserve and pastoral leases (Ningaloo, Cardabia and Warroora Stations, and the northern tip of Gnarloo Station), is reserved under the Land Act as reserve No. 40079 for the purpose of Marine Park and named Ningaloo Marine Park. It was vested in the NPNCA on 3 July, 1987 (Fig.2). Virtually all access to the southern half of the waters of the Park occurs through this reserve.

### 5.2.2 Pastoral Leases

The whole of three pastoral stations are adjacent to the southern half of the Marine Park (Fig. 2). Some of their coastal areas are attractive and readily accessible and their use for public recreation has increased rapidly over the past few years.

As the capacity of preferred camping sites along this stretch of coast has become fully utilized, people have resorted to less attractive and accessible places to camp, resulting in a proliferation of tracks, erosion, and conflicts with pastoral operations. Many campsites straddle the boundary between the 40m wide coastal reserve of the Marine Park and the pastoral leases.

This creates many problems for the pastoralists, as the quality of the camp sites and the coastal zone generally, is steadily degrading. It is essential that these coastal lands are appropriately managed to protect the interests of the pastoralists, to protect the capacity of the land to sustain public recreational use and to maintain environmental quality.

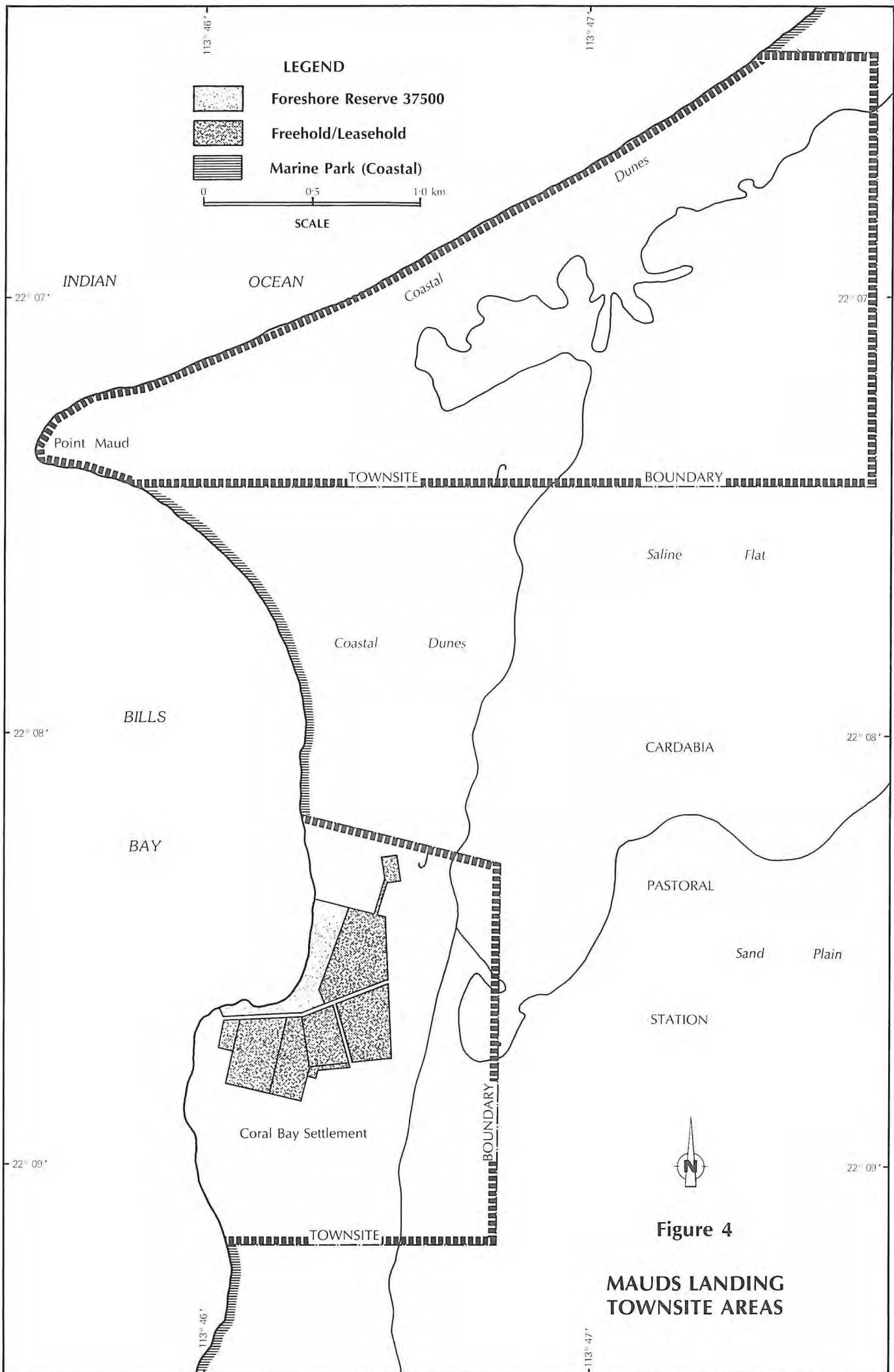
The option recommended in this plan is to utilize the provisions of Section 16 of the CALM Act, ie. to formalize management agreements between the pastoralists and CALM, whereby CALM will manage recreational activities on the coast in an integrated manner with recreational use of the Marine Park.

These agreements will not affect the tenure of the pastoral leases but will enable CALM, in consultation with the lessees, to manage camping and other recreational use and to protect the coastal environment, while providing necessary facilities for those seeking access to the Park.

### 5.2.3 Mauds Landing Townsite

In 1896, 1620 hectares of land at Point Maud was set aside as a townsite. This occurred at the time when there were whaling operations at Norwegian Bay and wool was shipped at Mauds Landing from nearby pastoral stations. A series of amendments has reduced the area and split the townsite. It now comprises two separate townsite areas; 65 hectares at Point Maud and a smaller area a short distance southwards at what is now known as Coral Bay (Fig. 4).

Only the southern portion (Coral Bay) of the two townsite areas has been developed. There are two caravan parks, an hotel and several sub-leases for "chalets". Several areas are freehold. Previous lack of



**Figure 4**

**MAUDS LANDING TOWNSITE AREAS**

planning has given rise to major problem as use of the area for recreation increases. The embayment (known as Bills Bay) is reaching limits to the number of people and boats the bay and small beach can sustain without increasing conflict between users. A planning study and draft Town Planning Scheme have been prepared for the townsite area at Coral Bay, which incorporates a review of future development and management.

#### 5.2.4 Foreshore Reserve at Coral Bay

On 22 November 1981 Reserve 37500 (Fig. 4) was vested in the Shire of Camarvon for the purpose of Recreation Management. With the concurrence of the Shire, vesting was transferred to the NPNCA on 22 August 1986. The purpose of the reserve is proposed in this Plan to be amended to "Marine Park".

This small reserve serves as a boat launching area, a place for beach and other swimming related activities and as a parking area for vehicles and boat trailers. Conflicts between uses and severe overcrowding have occurred for a number of years. These have reached critical levels during recent peak holiday periods.

#### 5.2.5 Defence Land

There are two areas of land held freehold by the Department of Defence adjacent to Ningaloo Marine Park. These are Location 44 (Fig. 5) at North West Cape and Location 97 (Fig. 2) between Cape Range National Park and Ningaloo Station. Location 44 extends to LWM and Location 97 to HWM.

Recreational activities in both areas have increased over recent years. The proliferation of vehicle tracks, and camping sites has resulted in degradation of coastal land. Unless recreational use is managed, misuse of the coast in these areas will continue.

In Location 44, south of Point Murat at Bundegi, the Shire of Exmouth, with design and funding assistance provided by the Department of Marine and Harbours, has established a boat ramp and shore based facilities which service an area used for mooring charter and other boats. Access to and use of the land, is the subject of an agreement between the Shire and the Naval Defence facility at Exmouth. Under this agreement, the access road to Bundegi has been excised and is now the responsibility of the Shire of Exmouth. It should be noted that US Navy has exclusive- use occupancy rights to all land designated as Prohibited Areas at North West Cape.

At North West Cape and at various locations on the coast southwards towards Vlamingh Head, the Shire has installed several roads to the coast and parking areas with the assistance of State funds.

In Location 97 south of Cape Range National Park, no land management is practised. When the weapons range further inland is declared active, access to the coastal plain portion of this area is "closed" by signposting and backed up by occasional aerial surveillance. At these times it can be difficult moving campers out and ensuring there are no further intrusions into the area whilst military operations are active.

#### 5.2.6 Cape Range National Park

Cape Range National Park was established in 1964. Along 55 km of coastline it is contiguous with the Ningaloo Marine Park (Fig. 2). The National Park includes a narrow coastal plain and a large portion of the spectacular Cape Range which forms the spine of the Cape Range Peninsula. Despite its aridity, Cape Range National Park has high conservation value and is an important tourist resource because of the

considerable scenic values and recreational opportunities that it offers.

Over the last decade public use of the Park has increased rapidly, with activities concentrating along the coastline, particularly where access to beaches is relatively easy. It is here that impacts of recreational pressure for both camping and day use are particularly significant.

A management plan has been prepared for the National Park. That Plan, which is current for up to 10 years, was approved by the Minister for Conservation and Land Management on 1 December 1987.

#### 5.2.7 Coastal Recreation Reserve

Two areas of coastal land at the northern end of the peninsula adjacent to the Marine Park were reserved for the purpose of Recreation and Coastal Management and jointly vested in the Executive Director of CALM and the Exmouth Shire Council. Reserves 40728 and 40729 were vested on October 14 1988. Reserve 40729 lies to the west of Yardie Road between the northern boundary of Cape Range National Park and the south western boundary of Lyndon location 44. Reserve 40728 lies east of Murat Road between Lyndon location 44 and 79 (Fig. 5). A management plan is to be prepared for these reserves (see Preface).

#### 5.2.8 Special Leases

Special lease 3116/7004 at Bulbarli Well near the southern boundary of Warroora Station is an annually renewable lease. It is held by a professional fisherman licenced to take rock lobsters (*Panulirus* species) in the southern area of the Marine Park.

Special lease 3116/7238 immediately north of Cape Range National Park was leased for a period to a professional fishermen as a base. It was transferred to a person not associated with the fishing industry. The lease expired in March 1989 and the area was absorbed into the new coastal reserve (See 5.2.7).

#### 5.2.9 Implications for Management

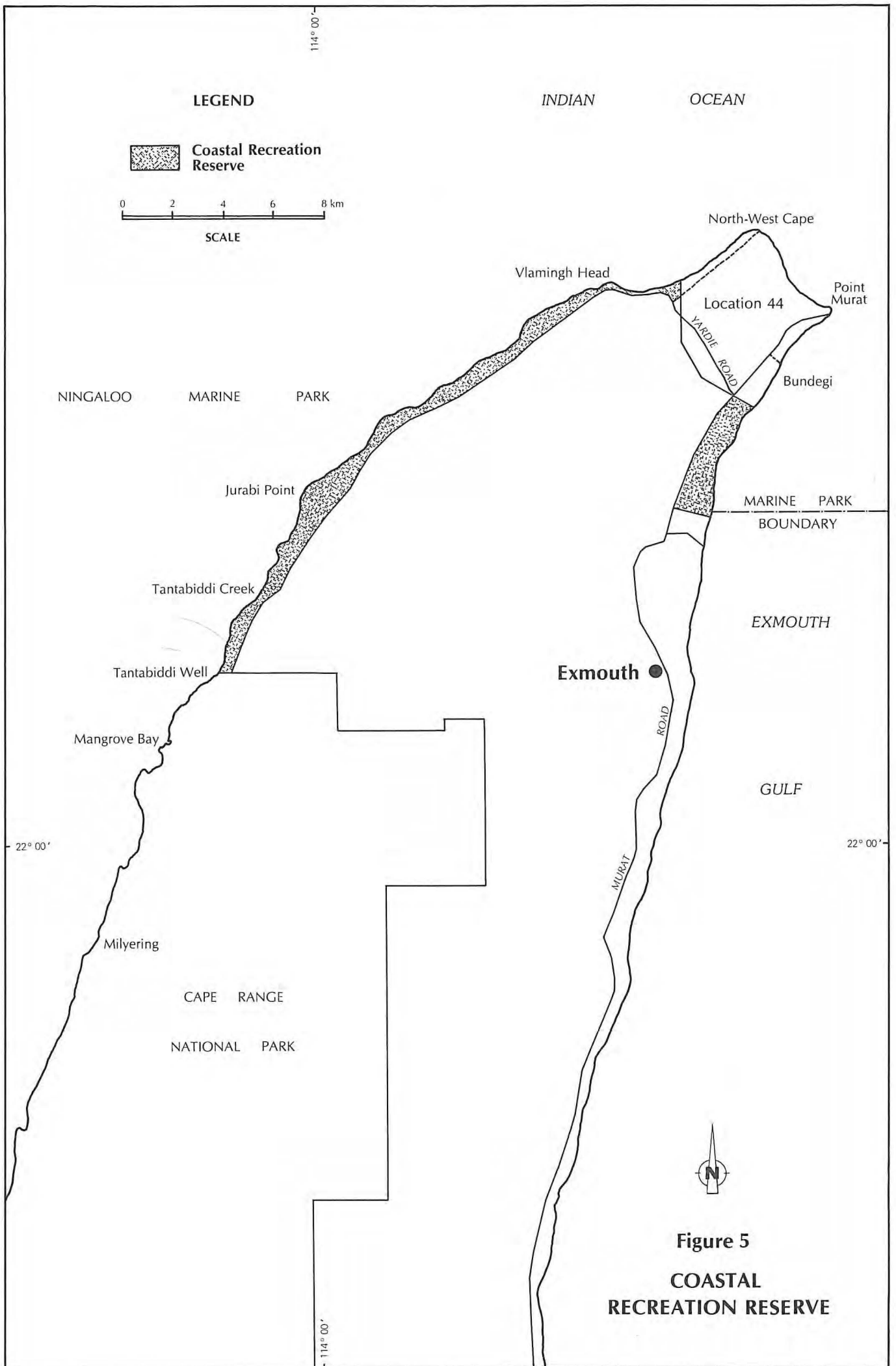
\* Management of the coastal strip of the Marine Park will be effective only if recreational use of the adjacent pastoral lands is managed in sympathy. It is desirable that management agreements for pastoral lands referred to in 5.2.2 be formalised and implemented without delay.

\* Management of coastal areas of Defence land in Location 97 and Location 44 needs to be integrated with management of the Marine Park for protection of coastal dunes and inter-tidal areas. An agreement is required between the Department of Defence and CALM for management of recreation on coastal portions of Defence lands.

\* Liaison must be established and maintained between CALM and all other parties with an interest in management and use of the Park.

\* Whilst not within the direct jurisdiction of management of the Park, accommodation in the Coral Bay Townsite should be limited to about present levels to curb over use of the coastline and adjacent Marine Park.

\* Cape Range National Park will be subjected to increasing pressure for use of its camping and day use



facilities as more people seek access to Ningaloo Marine Park.

\* Joint management of the coastal recreation reserve with the Shire of Exmouth should provide a firm basis for regional coastal management compatible with management objectives for the Park.

## 6. PHYSICAL ENVIRONMENT

### 6.1 MORPHOLOGY

The Ningaloo Reef is the largest fringing barrier reef in Australia, forming a discontinuous barrier enclosing a lagoon which varies in width from 200 metres to over 6 kilometres. At the extreme northern end of the Park, from just north of Jurabi Point to Bundegi Reef, there is no barrier reef, but there are shore reefs and some off shore banks. In the southern portion of the Park adjacent to Warroora Station the reef is closer to shore and less continuous than in the central and northern portions.

The average depth of the lagoon is 4 metres but there are areas where basins or long shore gutters, waters up to 15 metres deep occur. There are also large shallow areas, especially in the outer parts of the lagoon, where staghorn corals and massive coral bombies grow.

The width of the continental shelf in the Park is narrower than at any other location in Australia. This allows deep oceanic waters close to the Reef.

The reef flat is usually narrow (less than 150m wide) and typically composed of dead corals and coral rubble, with transverse sandy scour tracts. Its front edge is not raised but may have a narrow (*ca*, 20 metres) zone of living round headed corals (genus *Goniastrea*) upon which the swells break.

In many places there are deep long shore gutters in the reef flat separating outer and inner zones. In such cases the front edge of the inner zone is vertical or undercut usually with diverse growth of massive and encrusting corals. The front of the more exposed reefs is characterized by a pronounced spur and groove system on the reef front slope and rich coral growth. Beyond the reef edge the bottom slopes steeply to at least 20 metres. Thereafter there is usually a gradual seaward slope but there may be a series of off-shore coral banks aligned parallel to the reef and shore. In the northern section of the Park, the sea bed slope from the reef to the continental shelf break is much steeper than in the south of the Park.

Behind the inter-tidal reef flat there is a gradually sloping back reef which may be several hundred metres wide. Its shoreward edge may be abrupt, with an undercut, or it may merely grade gently into the lagoon. The back reef zone is characterized by extensive coral growth.

At intervals the reef is interrupted by passages. These may be more than 25 metres deep and 200-300 metres wide and they are subject to consistent fast flowing, out going currents. In most of them, ocean swells break across the entrance in certain conditions which can result in hazardous conditions for small vessels. Spectacular coral growth and fish communities occur at the sides of the passages.

The lagoon bottom has coarse calcareous sand in the shallows and fine calcareous sand or silt in the deeper basins and gutters. There may be long shore coral banks in some areas of the lagoon, but generally

the bottom is level and coral growth restricted to occasional bombies and thickets of staghorn corals. Coral growth is poor in the inner part of the lagoon. Near the shore there is extensive cover of macro algae attached to rock pavement and platforms.

The shore is either sandy beach, rocky benches or low limestone cliffs, sometimes with a sloping beach rock platform or a narrow fringing reef flat. Projecting sandy points occur wherever currents flowing in opposite directions along the coast meet and change direction to flow out to sea eg. at Winderabandi Point, Turquoise Bay and Point Maud.

## 6.2 OCEANOGRAPHY

### 6.2.1 Currents

Water movements within the lagoon are complex and may reach considerable speeds, driven by winds, tides and wave energy. Morphology of the reef and the coastline and the position and size of passages in the reef are important influences on currents within the lagoon. In general, oceanic water floods over the reef flat into the lagoon, often creating high current flows near the shore, then exits from the nearest passage. Beyond the reef, in the open ocean, there are less data on currents. The Leeuwin Current begins its southward flow in Autumn and continues during the winter months but as yet there is limited information on its influence on the biological and physical processes of the Reef.

### 6.2.2 Temperature

Water temperatures in the lagoon vary depending on season, depth and location and have a large diurnal range. Seasonal averages range from 21°C in winter to 30°C in summer. Ocean water flowing over the reef flat during Autumn and Winter is usually several degrees warmer than lagoon water in the shallows closer to shore. Temperatures within the lagoon can vary by several degrees depending on water depth, time of day and seasonal influences.

### 6.2.3 Tides

Tides are predominantly semi diurnal with a range of up to 2 metres at Spring tides. Tidal amplitude is slightly higher at the northern end than at the southern end of the Park.

## 6.3 CLIMATE

### 6.3.1 Air Temperature

Air temperature monitored at Tantabiddi Well has a low diurnal variability throughout the year. In winter, the average day time temperatures range between the low to high 20's. In summer, average day time temperatures range from the low 20's to low 30's. At Exmouth, on the eastern side of the Cape, temperatures vary more widely. Average minimum of 23°C occur in January and 14°C in July, with average maximum of 37°C and 24°C respectively.

### 6.3.2 Rainfall

The coastal environment adjacent to the Marine Park is arid. There is normally no surface runoff from the land to the Reef except when infrequent cyclones, or intense winter rain, precipitate enough rain to flush out one or more of the dry gullies on the western side of the Cape Range in the northern section of the Park.

Annual rainfall along the coast ranges between 200-300 mm with a 40% variability and evaporation of



1780-3050 mm per year. Rainfall can occur in summer and winter. Summer rainfall from cyclones is irregular but sometimes heavy. Lighter more regular falls occur in winter with June the wettest month of the year.

### 6.3.3 Winds

The dominant wind conditions throughout most of the year are the easterly trade winds becoming more south-easterly in winter. Wind data from Tatabiddi Well in the northern area of Cape Range National Park indicate a predominant wind direction from the south-south west with velocities ranging from 1-3 m/sec to over 10 m/sec with a seabreeze developing in the late morning. Brisk seabreezes from the south occur around 70% of afternoons. Cyclonic winds may be severe, exceeding speeds of 150 km/hr. However, the frequency of cyclones crossing the Cape Range Peninsula is low.

The wind characteristics on the western side of the Range are quite different from those at Learmonth or Exmouth on the eastern side of the Range where the cooling effects of the sea breezes are not felt to the same extent.

## 6.4 GROUNDWATER

Groundwater resources along the coast occur only sporadically and are thin and of varying quality. The provision of water suitable for ablution will be costly. Treatment for potability is likely to be prohibitive in cost. Any extraction of groundwater is subject to licencing by the Water Authority.

## 6.5 IMPLICATIONS FOR MANAGEMENT

- \* Wind, tide and currents which largely control recreational use of the waters within and outside the lagoon can at times make conditions dangerous for boating and swimming.
- \* Variable physical conditions of the sea will affect the safety of boat users and therefore impose limitations on use of the Park.
- \* Diving will require careful selection of locations and appraisal of sites, to ensure that safety requirements are met under variable conditions experienced on the Reef.
- \* Safety requirements for boat users as prescribed by boating regulations must be enforced and advice on local conditions provided to Park visitors.
- \* Information on the safe passage through coral areas is required in some parts of the Park where coral growth may create problems for small boat users and, conversely, where passage of boats may damage corals.
- \* Climatic conditions in the Park are considerably more moderate and comfortable than at Exmouth and further inland.
- \* The seasonal patterns of use are likely to change from a predominantly winter season to all year round use as facilities improve on the coast adjacent to the Park.
- \* Principal boat launching facilities need to be close to passages through the reef in localities where there

is protection from strong south westerly winds and where there are reasonable areas for mooring small vessels. Such sites are few throughout the length of the Park.

- \* Provision of shelter from the wind and sun will require consideration in the planning of amenities on the coast.
- \* Conditions on the lagoon will normally be more favourable in the morning than in the afternoon due to brisk sea-breezes. This will significantly affect the patterns of recreational use in the Park.
- \* Siting and development of facilities will need to take cognisance of cyclones, the potential impact and standards established for buildings in cyclone prone areas. Closure of the Park will be required when a cyclone alert is active for the area.
- \* Limited availability of potable water in the coastal areas severely constrains development of recreational facilities.
- \* A policy of minimum water usage will be required in recreation sites. Potable water supplies will required to be transported in by campers. Abstraction of groundwater will require careful management to prevent saline intrusion.

## 7. CONSERVATION VALUES

### 7.1 OVERVIEW

A feature of the Ningaloo Reef is its accessibility. The corals of the back reef and lagoon are easily reached by dinghy from the shore. It is the only Australian coral reef of a large size and quality which is easily accessible to visitors. For this reason alone Ningaloo Reef is worthy of management and conservation as a community resource.

Like most coral reefs, Ningaloo Reef is a complex ecosystem with a high species diversity. Most of the Reef lies within the tropical belt of the Indo West Pacific Faunal Region with the Tropic of Capricorn crossing the southern end of the Park. The majority of species occurring in the Park are widespread throughout this vast Region; many of them are also distributed in waters off East Africa and southern Japan, in the Red Sea, the Great Barrier Reef, and waters around the South Pacific Islands. The Ningaloo Reef is at the southern (latitudinal) edge of the Region. Within the southern part of the Park, the Western Australian Overlap Zone begins, ie. a biogeographic transitional zone between the tropical fauna and the highly endemic temperate fauna of the Southern Australian Faunal Region.

The composition of the fauna and flora is, therefore, of great interest to biogeographers. A large proportion of the tropical species are at the southern limit of their geographic range within the Park. Conversely, a few temperate Southern Australian or endemic West Coast species are at their northern limit of range within the Park. For example, the western rock lobster (*Panulirus cygnus*) is a west coast endemic which is the basis of a major fishery between Cape Naturaliste and Shark Bay. It is found in low numbers in the southern parts of the Park but is replaced further north by two tropical species, the ornate rock lobster (*P. ornatus*) and the painted rock lobster (*P. versicolor*). Another example is the temperate

reef gastropod (*Turbo marmorostoma intercostalis*) which has its northern limit in the southern part of the Park, and is replaced in the northern part by its widespread Indo West Pacific relative (*T. m. argyrostoma*).

In northern Australia two marine ecological faunal units are recognised, an "oceanic" group tending to occupy clear oceanic habitats and a "mainland" group which live in more turbid waters. The oceanic fauna are most strongly developed on the offshore coral reefs of Queensland. In Western Australia, the mainland group dominates as far south as North West Cape; coral reefs being poorly developed on the north west coast except for the shelf break atolls (eg. Rowley Shoals) and a few fringing reefs on the outer islands.

North West Cape represents a sudden change of habitat. To the east of it lies Exmouth Gulf and the relatively turbid waters of the North West Shelf where the "mainland" fauna dominate. Few of the turbid water "mainland" species extend further south than this. The western shore of the Cape Range Peninsula, south of North West Cape has no rivers and the edge of the continental shelf is very close to the mainland. Consequently, this coast is bathed in open ocean water, providing a typical habitat for "oceanic" species.

Thus, North West Cape marks a very abrupt change in the marine fauna of northern Western Australia. The marine fauna of the Ningaloo Marine Park is an outlier of the Indo West Pacific "oceanic" coral reef group. It is physically isolated from other similar habitats further north in the turbid waters of the North West Shelf, but has a degree of connection with southward flowing ocean currents (eg. the Leeuwin Current), which may provide opportunities for genetic continuity of marine organisms.

The physical structure of the Ningaloo Reef lagoon system is less varied than that of other major coral reef systems such as the Great Barrier Reef. It has, however, a comparable species richness (diversity) to the flora and fauna found at similar latitudes on the Great Barrier Reef. Nevertheless, the Marine Park contains a range of coral reef habitats and a varied flora and fauna. Survey work is far from complete. The numbers of species in several faunal groups, as known in 1988, are shown in Table 1. Further study, especially in off-shore habitats, will undoubtedly greatly extend this list.

**Table 1. Summary of selected marine animals recorded in 1988.**

GROUP	FAMILIES	GENERA	SPECIES
Reptiles			9
Mammals			8
Fishes	81	234	501
Corals (hermatypic)		54	217
Echinoderms		56	90
Molluscs			600+
Crustaceans			13

## 7.2 FISHES

A summary of the fish fauna was given in the 1983 report (May *et. al.*). A survey was conducted in the lagoon in 1987. This survey included a census of populations of fish species sought after by recreational fishermen. The census data indicated high densities of two species most sought after, ie. the yellow-

tailed emperor (*Lethrinus mahsena*) and the north west snapper (*L. nebulosus*), with densities of over 420 fish per hectare for both species found in certain habitats (Ayling and Ayling, 1987).

The census data contained no suggestion that, at this time, fishing pressure at popular locations has reduced population numbers or has induced changes in size frequency distributions, particularly in Lethrinids ("Snappers"). However, the census data will be useful as baseline data for further studies.

Very little information is available on the biology of these two fish species, nor on any other target species in the Park. Whether individuals spend their entire life cycle within the lagoon, or whether there is interchange between the lagoon and open ocean habitats is not known. Nor is there any comprehensive information of spawning or nursery sites, although the 1987 survey suggests that the algal dominated lagoon is a nursery ground for *Lethrinus* species.

In addition to the fishes which live among the corals of the lagoon and reef, there are many wide ranging pelagic species such as the spanish mackerel (*Scombormorus commerson*) and golden trevally (*Gnathanodon speciosus*) which are commonly caught by recreational fishermen when trolling. It is assumed that these species are migratory.

Apart from the edible fishes which are commonly caught by recreational fishermen, there are many other beautiful fish species, typical of coral reefs. These occur in great abundance and provide a spectacle for the recreational diver, underwater photographer, and glass bottom boat viewer.

### 7.3 MOLLUSCS

The mollusc fauna of the Park is diverse. A small percentage of species (perhaps about 5%) is endemic to the region. Only a few species would be considered edible. Two species of edible giant clam (*Tridacna maxima* and *T. squamosus*) are common in the Park and, although they are sometimes used as bait for fishing, they are not commonly eaten. The same is true of the several species of octopus. Only the rock oyster (*Saccostrea cucullata*) is eaten to any extent which has led to their scarcity in many areas. There are at least 3 species of abalone (*Haliotis*) in the Park but none is abundant.

Many of the molluscs have very attractive shells. For example there are at least 25 species of cowry (*Cypraea*). Shell collecting has been a popular activity in the Park, including the operations of commercial and semi commercial dealers.

The majority of the molluscs in the Park possess free swimming pelagic larval stages and are capable of wide dispersal by this means. Provided that other breeding populations exist within dispersal range, local extinction through overcollecting or alteration of habitat would be unlikely to be permanent. Exceptions to this would be those species which have no pelagic larval stage (eg. the baler shell *Melo amphorus*, the giant conch *Syrinx aruanus* and the volute *Aulicina oblita*). Such species are vulnerable to long term local extinction and are in need of protection.

### 7.4 CORALS

With more than 200 species, the coral fauna of the Park is magnificent. The growth of coral in many areas is luxuriant and provides a very high quality visual spectacle, compared with other Australian coral reefs. The majority of the species are common to both north western and north eastern Australia.

Coral species reproduce sexually and asexually. A free swimming pelagic larval stage enables wide dispersal of propagules. Most coral populations are thought to be locally self sustaining but this assumption may not hold true. Coral reefs are, however, capable of being re-populated by pelagic larvae from elsewhere following localised extinction.

Localised extinction may occur naturally through causes such as the coincidence of exceptionally low tides and hot weather, predation, eg. by the mollusc (*Drupella cornus*) and the crown of thorns starfish (*Acanthaster planci*) or through population decline. Assuming that suitable habitat conditions are restored, re-establishment of a complex coral community may occur in time. However, some very slow growing species such as *Porites* may not be replaced for very long periods.

The crown of thorns starfish is present in the Park but not in damaging aggregations. The coral eating gastropod *Drupella cornus* has, on the other hand, been observed over recent years to be increasing in number over wide areas throughout the Park. This predator is seriously affecting coral growth leaving extensive areas of the reef completely dead. This phenomenon has been reported at three other localities in the Pacific Ocean, although almost nothing is known of the biology of this predator, nor of the long term effects large aggregations may have on coral ecosystems. Several surveys have been conducted to determine the extent of impact this predator has induced on coral formations in the Park.

#### 7.5 OTHER SPECIAL FEATURES

Of particular wildlife conservation interest are green turtle (*Chelonia mydas*), hawksbill turtle (*Eretmochelys imbricata*), dugong (*Dugong dugon*) humpback whale (*Megaptera novaeangliae*), and the whale shark (*Rhinodon typus*), all of which occur in the Park.

Green turtle nest on many beaches in the Park during the summer months. Dugong have been seen in small numbers at several localities, especially in Norwegian Bay and on the sea grass beds in the lagoon north of Bruboodjoo Point. Humpback whales migrate north and south on their annual migration routes, often passing very close to the reef front. Whale sharks appear in the Park, also close to the reef front, during the autumn months.

The Park contains habitats which are important as feeding and nesting sites for waders and seabirds, some species of which are protected under International Conventions for the protection of migratory birds. Mangrove Bay is a particularly important habitat for birds and a hide has been constructed to enable visitors to experience at close hand, waders and other birds which are normally difficult to get near to.

Large seabirds such as Albatross (*Diomedea* species) can often be seen from the shore skimming the waves outside the lagoon whilst numerous other species can be observed from boats outside the Reef.

#### 7.6 IMPLICATIONS FOR MANAGEMENT

\* Unlike the majority of tropical coral reefs, Ningaloo Reef is unlikely to be subject to pollution from river run off (except when unseasonally heavy rains cause ephemeral creeks to breach sandbars), agriculture or industry because of the aridity and tenure of the adjacent land. It should, therefore, be possible to maintain Ningaloo Reef as a coral reef ecosystem free from external influences providing recreational and commercial uses are adequately controlled.

- \* Ningaloo Marine Park has varied, colourful and easily accessible coral reef fauna and flora which constitute a valuable community resource for recreational and educational uses. As its qualities and accessibility become better known, visitor demands will increase.
- \* The Park is situated at the latitudinal border of the Indo West Pacific Faunal Region and contains one of the world's major coral reef systems bordering an arid coastline. Its accessibility, clarity of water and diversity of marine life will attract increasing attention from people interested in coral reefs.
- \* At present there are no marine species known to be found only in this Park. However, the reef is geographically isolated from other coral reef systems much further north and genetic contact may be limited, relying on the carriage of pelagic larvae in ocean currents. The extent of linkages between W.A. coral reef systems is unknown.
- \* The reef and lagoon have high qualities for recreational activities. Care must be taken to avoid spoiling accessible areas by over use and uses which may be environmentally damaging.
- \* Recreation activities such as shell collecting, spear fishing, net and line fishing techniques which have the potential for depleting populations with possible ecological consequences, or which may disturb populations to the disadvantage of other Park users, should be prohibited or carefully managed to minimise adverse effects.
- \* Particular habitats in the reef and lagoon carry dense populations of certain fish species which are much sought by recreational fishermen. Management programmes based on sustainable use principles are needed to protect the fish stocks from over fishing and prevent flow on ecological disturbance.
- \* There are few data on the biology of the fish species which are most commonly sought after by recreational fishermen. The level of fishing which these species could sustain in the Park is not yet known.
- \* Research and monitoring programmes are required to gain an understanding of the stability of marine communities in the Park and their response to natural perturbations and the effects of human use.
- \* The fine coral formations in most parts of the Park are suffering severe damage by predation from the coral eating gastropod *Drupella cornus*. Little is known of the biology of this predator, or its long term effects on coral communities. Research and monitoring programmes are required to aid in revising management strategies for the Park.
- \* Turtle nesting on some beaches will be vulnerable to disturbance as public access increases. Dogs, artificial lights and other disturbing influences should not be permitted in these areas during the nesting season. Further work is needed to identify the most important turtle nesting sites.
- \* Sea grass and algal beds are important feeding areas for dugong and turtles. They should be protected from disturbance eg. excessive use of power boats. Further work is needed to identify the most important dugong and turtle feeding areas and to develop appropriate strategies for management of those species.

\* The habitats of seabirds and other birds which breed within the Park will require protection from disturbance during times of breeding.

## 8. RECREATION VALUES

### 8.1 OVERVIEW

Recreation is a primary activity in this Park. An important objective of management is to facilitate public access to the recreational and educational resources of the Park consistent with maintenance of its conservation values. Recreational activities include camping, fishing, swimming, boating and sailing, diving, beach walking and general enjoyment of the coastal environment. The quality of the beaches, lagoon and reef environments as a recreation resource is high, although the harsh environment (exposure to sun and wind, and limited potable water) may not suit some visitors.

Recreational use of the coast and adjacent waters has increased rapidly over the past decade as awareness of the attractiveness of the Reef and coast has grown. Quality of access has steadily improved with the construction of better roads. This has influenced an increase in accommodation facilities in the region.

In 1982 about 55,000 people visited the coastal areas of the Park. Most of them camped in sites that contained no facilities. Although there are no precise data since 1982, it is apparent that there has been a substantial increase in usage since then.

### 8.2 CAMPING

Major commercial camping areas exist in the Exmouth and Coral Bay townsites. In the coastal reserves north of Cape Range National Park only spasmodic and unserviced camping occurs. This will be reviewed when a management plan is prepared for that area (see Preface and 5.2.7). Camp sites with limited services are available in the Cape Range National Park. South of the National Park on the coastal areas of the pastoral leases and the Defence land in Location 97, unserviced and ad hoc camping is commonplace. Many campers prefer the relative isolation of these sites to the crowding and regulation of the commercial camping areas and come equipped with their own water and lighting.

At present the majority of campers come for the fishing and relaxation and seek sites close to the shore. Although rarely available, shade is keenly sought as is shelter from the strong south westerly winds. Many campers with small boats seek sites where it is possible to launch the boats across the beach and where there are safe areas to moor or beach boats. Sites where there is relatively deep water access for boats to reach areas for fishing and diving within the lagoon, or through passages in the reef are favoured. There are few sites along the length of the Park where all these features occur together.

During the main visitor season (May to September) the majority of ad hoc camp sites along the coastal areas of the three pastoral leases are continuously occupied. The pastoralists estimate that the number of campers has doubled since 1982. As the pressure increases, campers forced to choose less suitable sites have made new tracks. This has led to environmental degradation in those areas.

Although the "old time regulars" still seek isolated unserviced sites in the Defence land and the pastoral areas, there is an increasing number of visitors who prefer serviced camp sites in Cape Range National Park or in caravan parks in Exmouth or Coral Bay. These include caravaners travelling around the coastal

highway and people from the inland mining towns.

Camping in the Cape Range National Park has been described in the approved management plan referred to in the Preface. Active management there is maintaining environmental values while providing for a diversity of camping areas and recreation experiences.

### 8.3 FISHING

At present the majority of visitors that go to the Park catch fish. Most people fish from the shore or inside the lagoon from dinghies whilst others, some with larger boats, venture outside the reef to fish for pelagic species.

The usual fishing method used by those with boats is by rod or hand held line. Use of spearguns or nets is not common, although spearguns and in particular net fishing, have been controversial issues at times and are a cause for annoyance for many visitors. Net fishing for mullet (which are normally not caught by line) is indiscriminate for other species because of netting practices and net dimensions.

Access for fishing outside the reef is dependent upon there being a safe passage through the reef and access from shore for boat launching and retrieval. There are only a few locations where these requirements coincide. This occurs principally at Bundegi, Tantabiddi Creek and Coral Bay.

The main target species of recreational fishermen are north west snapper, yellow tailed emperor, red emperor, greasy cod, sweetlips, baldchin groper, black-spot sea perch, coral trout, and various species of parrot fishes. Fishing using lures trolled behind boats, is practised to catch pelagic fish such as spanish mackerel and golden trevally. Divers sometimes take rock lobsters, although using spears or hooked instruments is not legal. Rock oysters are sometimes taken. Octopus are commonly taken for bait. Clams are also taken for bait and occasionally for consumption.

At present, bag limits under the amateur fishing regulations allow 10 reef fish per person per day. Many visitors do not exceed this limit and catch only what they require for their daily needs. Some visitors, however, come equipped with freezers which they fill with fillets to take home. There is incentive for some of these visitors to exceed the current bag limits.

In April 1987, a survey of yellow tailed emperor and north west snapper in fished and un-fished areas of the lagoon adjacent to the Cape Range National Park provided no evidence that current levels of fishing is having detrimental effects on fish population numbers (see Section 7.2). On the other hand, there is anecdotal evidence to suggest that the ease of catching fish may have decreased in many areas. However, the establishment of sanctuary zones may change this situation if they act as replenishment areas for adjacent zones. Research will be required to determine appropriate strategies for management.

A charter boat industry provides a service for off-shore recreational fishermen. This includes both bottom fishing and trolling, the target species being generally the same as those caught in the lagoon or outside the reef. In the outer part of the Park, and beyond, there is some "big game" fishing, for marlin and sail fish. There seems to be some potential for developing the charter boat and big game industry further.



#### 8.4 COLLECTING

Collecting living specimens from conservation reserves is generally considered inappropriate. Prior to declaration of the Ningaloo Marine Park, collecting shells, aquarium fish, corals, and other marine fauna was a common recreational activity. Some amateur collectors exchanged and sold shells, sometimes on a large scale, as well as collecting them for their own use. There is anecdotal evidence that large quantities of shells were shipped overseas. In Exmouth it is commonly believed that the intertidal reefs at Bundegi and the northern end of the Park have been virtually stripped of shells and some other animals.

The truth of this assertion is unknown. Nevertheless, there is concern that such practices may have occurred. Apart from the effects on the species collected, human exploitation on shallow water molluscs may have deleterious ecological consequences for the whole Reef.

On the other hand, interest in the natural history of the marine fauna and flora is a worthwhile recreational pursuit and building a reference collection for personal study is a natural part of this activity. The question at issue is whether there is a need to take living specimens for this purpose and whether collectors should be permitted to do so.

#### 8.5 DIVING

SCUBA and snorkel diving in the Park is increasing rapidly as more people become aware of its attractions. A feature of the Park is that attractive coral reefs and fishes are within easy swimming distance from the shore. The back reef areas and bombies in the lagoon also provide many excellent opportunities for safe shallow snorkel and SCUBA diving.

When conditions permit, diving on the reef front and in deeper water beyond is very attractive as the underwater landscapes are often spectacular with luxuriant coral growth. There are also many excellent places for relatively safe shallow SCUBA diving in the passages and lagoon when sea conditions make it hazardous to venture outside the Reef.

Two businesses offer diving instruction and hire of equipment, one at Exmouth and the other at Coral Bay.

#### 8.6 BOATING

Most visitors to the Park fish or dive, many bringing small dinghies with them. Some trail larger boats which are suitable for venturing outside the Reef. At times there has been competition for the use of boat ramps and launching places but generally this has not been a problem. Nevertheless, limited boat launching facilities in the Park limit public access to the full potential of its recreational and educational resources.

At Bills Bay (at Coral Bay), a small beach is under pressure from various beach related activities and coral formations close to shore are being damaged by anchors and moorings. Problems also arise when boats attempt to navigate through coral at low tide. . The beach is used for launching and retrieval of boats, vehicle and trailer parking and boat storage as well as passive uses. A semi-submersible, a glass-bottom boat, boat-hire, charter boats and private vessels all compete for space with each other, and with beach and water uses

There are few safe areas for large vessels in the Park. A narrow channel at Bundegi Reef and a sheltered lagoon area at Tantabiddi Creek are the only safe sites for mooring associated with substantial boat launching facilities. In the 1987 season, six charter boats operated from Exmouth and two from Coral Bay. At present facilities for large charter vessels are limited. This will change when a marina proposed for Exmouth is completed and if a proposed marina at Mauds Landing proceeds.

#### 8.7 SAILING, WINDSURFING AND WATERSKIING

Sailing is a popular past-time in Exmouth Gulf from the Exmouth town beach, but there is little of this kind of activity within the Park. Most of the lagoon is too shallow and hazardous for yachts to navigate with safety and at low tides this also applies to windsurfers and waterskiers. No area in the Park is gazetted for the use of motorised craft including jet skis and water skiing.

#### 8.8 SURFING

Surfing occurs at various parts of the Park particularly close in-shore between North West Cape and Vlamingh Head, on the outer reef at Yardie Creek and near Coral Bay. The level of use is not high except at Vlamingh Head and other localities close to Exmouth.

#### 8.9 PASSIVE RECREATION

Long sandy beaches with broad vistas of colourful lagoon waters, white sand dunes and red hinterland are a feature of the Ningaloo Marine Park. Passive enjoyment of this coastal environment is perhaps the most widely practised recreational activity. The remoteness, wildness, spaciousness and solitude are important attributes of this Park. Those who value these assets are also likely to highly value the fascinating natural history of the coastline. Beachcombing along such a shore, especially at low tide when there are sand flats and coral tide pools to explore, is one of the most interesting and restorative forms of recreation.

#### 8.10 VEHICLE USE

Vehicles are occasionally used along beaches as a means of assisting access to areas that are not easily reached through extensive dunes. Types of vehicles include registered vehicles and bikes, unregistered bikes and bikes that can only be registered under the *Control of Vehicles (Off-road areas) Act*, 1978. Vehicle use occurs primarily at selected locations along beaches adjacent to pastoral stations. Erosion of dunes occurs when access is poorly located or when vehicles are used as a recreation activity in dune formations. Social conflict arises when vehicle use disrupts passive use of beaches.

#### 8.11 IMPLICATIONS FOR MANAGEMENT

\* The Park offers a wide range of high quality opportunities for recreation. There is a pressing need for the provision of onshore facilities such as roads, parking areas, campsites, launching facilities and toilets. This need is likely to increase and will place a heavy load on management resources.

\* Inevitably, easy access to big-game and other charter fishing and excellent diving localities will attract tourists, including overseas tourists. It will be necessary to ensure that facilities are developed to appropriate standards for servicing tourists.

\* Many Park visitors seek relative isolation and do not expect facilities to be provided. Care should be taken to preserve those values in large areas of the coastline.

- \* As visitors to the Park increase in number, some heavily used areas of the reef, lagoon and shore are likely to become degraded unless measures are taken to prevent over-use and damaging practises.
- \* Attractive camp sites in close proximity to the shore which are able to sustain heavy use adjacent to or near safe areas for mooring and boat launching sites, are not common. The Cape Range National Park management plan provides the framework for maximum sustainable camping along the northern shore of the Marine Park. There is a need for a plan to maximise camping potential along the southern and central coastline and for management of sites in that area to prevent further environmental degradation.
- \* Park visitors require different levels of facilities. A range of camp sites, from fully serviced camping areas to remote, isolated and unserviced camp sites will be required.
- \* Some recreational activities, such as line fishing, spear fishing , underwater photography, surface sports, or natural history viewing, are likely to be in conflict with each other. This may be resolved most effectively by zoning, thereby separating conflicting uses.
- \* In order to maintain fish stocks and prevent detrimental ecological flow on effects from over fishing of some species, recreation fishing should be regulated and managed. Areas should be set aside where fishing is not permitted, to serve as replenishment areas as well as for scientific reference and public viewing purposes.
- \* Operation of commercial charter boats for recreational fishermen and divers provides an important service to Park visitors. Lack of suitable moorings and other facilities may limit the effectiveness of the existing charter services.
- \* Collecting living animals and plants in the Park is not consistent with the purpose of a conservation reserve. However, collecting certain forms of dead marine life for reference and study purposes is a desirable recreational activity.
- \* Routes of access to beaches and use of any type of vehicle along beaches will require careful consideration of potential environmental and social conflict before sanctioning such use.

## 9. EDUCATION VALUES

Because of the accessibility of the coral reef and lagoon and the high diversity and attractiveness of the flora and fauna, there are many opportunities for environmental education programs to enhance the quality of visits to the Park. Coral reef ecosystems are of immense interest to people of all ages. Interpretive printed materials and activity programs could be provided in the Park as educational activities in their own right, as well as to enhance the experience of visitors engaged in other pursuits.

A grant from the Australian Bicentennial Authority has assisted in the establishment of a major visitor centre at Milyering in the Cape Range National Park. The centre will be used as the focus for a range of educational and activity programmes relating to the marine and coastal environments.

As well as the modern living coral reefs, with their range of habitats and easy access for study, there are series of fossil (Holocene and Pleistocene) coral reefs on the adjacent coastal plain. This circumstance lends itself very well to education programmes on marine natural history especially coral reef ecology, placed in the context of geological and geomorphological evolution.

Many locations in the lagoon are suitable for development of underwater nature trails for both SCUBA and snorkel divers.

At Mandu Mandu in Cape Range National Park where the reef is close to the shore, corals, fishes and other animals can easily be seen by novice snorkelers. At many other localities there are intertidal rock platforms with tide pools and a very rich flora and fauna. The extensive mud flats at Mangrove Bay and sand flats at numerous locations support a very different biota as well as providing seabird feeding and resting sites. These biologically rich areas provide interesting opportunities for natural history excursions.

Departmental officers could conduct excursions along nature trails through these and other interesting environments when staff are available for duties of this type at the Milyering Bicentennial Visitor Centre and the northern parts of the Park. Eventually nature trails could be established elsewhere in the Park.

Glass bottom boats operate at Coral Bay and at Bundegi reef, providing reef viewing tours for Park visitors. Interest has also been shown in the development of similar services at Tantabiddi, and other locations in the Park. Care would be needed to prevent environmental damage and commercial operators should be trained to ensure high standards of information are provided to visitors.

Turtle nesting (November-January), the annual coral mass-spawning (March), the arrival of the whale sharks (March-April), and the passing of the humpback whales (May-October) are events of special interest. These events lend themselves to special educational tours.

#### 9.1 IMPLICATIONS FOR MANAGEMENT

\* The coral reef and lagoon ecosystems of the Park offer great potential for educational programmes, in particular programmes for school and other groups, for which the Milyering Visitor Centre would initially provide an excellent venue and eventually at other locations such as Coral Bay.

\* Educational programmes should seek:

- a) to promote understanding of marine, coastal, and particularly coral reef ecosystems;
- b) to provide information which will guide visitors on resources available in the Park and regulations intended to protect Park values;
- c) to provide information and activities which will enrich visitor enjoyment, experience, safety and comfort in the Park;
- d) to promote awareness of environmental impacts which human activities may have in these ecosystems;
- e) to provide information which assists in achieving management objectives.

\* There is potential for development of reef and intertidal nature trails and special event natural history tours.

- \* There is potential for expansion of glass bottom boat reef viewing and diving tours.
- \* There is a need for development and distribution of interpretive material. Consideration should be given to involvement of the tourist industry in providing some interpretive material, although consultation would be necessary to ensure that standards of presentation and accuracy are maintained.
- \* Because the Park is extensive, the provision of facilities will need to be undertaken progressively as funds permit.
- \* Promotion of the Park by CALM and other agencies needs to be matched to the requirement for the protection of Park values. Careful monitoring will be needed to ensure that the balance between visitor pressure, management capability and conservation of Park resources, is maintained.

## 10. COMMERCIAL VALUES

### 10.1 FISHING

The oceanic waters of the Park are presently open to taking of scale fish by line for the purposes of the Fisheries Act. There are approximately 20 licenced boats that operate in the area, including recreation charter boats in Exmouth and Coral Bay. These are licensed to fish commercially as well as carry tourists. The majority of Western Australian fishing boats have an endorsement on their licence that prohibits boats to be used for fishing between Tantabiddi Creek and Point Maud.

#### 10.1.1 Wet-line Fishing

Two boats based at Tantabiddi Creek and one at Coral Bay fish deep waters beyond the lagoon.

#### 10.1.2 Trawling

Trawling does not occur in the majority of the Park. However, the area east of Bundegi Reef is an important part of the Exmouth Gulf Limited Entry Prawn Fishery, which has operated for short periods of the year for king prawns since 1963. Prawn trawling activities may generate some disturbance of the seabed and their practices are considered by some to be environmentally unacceptable. Conversely, some hold the view that prawn trawling has little effect on the Reef. At present there is no substantial data to support the view that trawling impacts on these coral reefs.

Trawling trials have been conducted on the outer continental shelf area southwest of Norwegian Bay to assess the potential for a demersal fishery north of the Shark Bay Snapper Fishery. The issue of trawling in the Park will require careful assessment and monitoring.

#### 10.1.3 Pelagic Trawling and Purse Seining

Trials have been conducted into the feasibility of developing a pelagic trawl or purse seine fishery within the General Use Zone. There are indications that a mid-water trawl fishery may have potential but further trials will be required to determine this.

#### 10.1.4 Netting

Limited beach seining has occurred in the Park over a number of years. Conflict has arisen with other Park users over the method of fishing. Occasionally set netting has also been carried out.

### 10.1.5 Trapping

Some trapping occurs by fisherman based in Carnarvon and Exmouth. Present legislation prevents use of traps in less than 60 metres of water. Recreational fishing is increasingly targeting a species such as red emperor which are an important component of the trap catch.

### 10.1.6 Aquarium Trade

Fish-collecting licences operable on the Western Australian coast are restricted from collecting any marine fauna between Tantabiddi and Point Maud. All species collected in the Park can be found in waters outside the Park.

### 10.1.7 Rock Lobster

One person holds a licence to take rock lobster (*Panulirus* species) by hand using compressed air breathing equipment. He operates at the southern end of the Park, which is the approximate northern limit of distribution of the western rock lobster (*Panulirus cygnus*). The licence is not transferable.

### 10.1.8 Fishing Charter

Six boats presently operate (intermittently) from Exmouth or Tantabiddi and two from Coral Bay, providing facilities for recreation fishing for visitors who do not otherwise have access to a boat and gear. These boats are licenced as commercial boats under the *Fisheries Act* and may therefore sell fish caught on them. Most boats rely on the sale of fish for commercial viability when recreation charter is infrequent. Charter boats mostly either wetline for demersal fish or troll for pelagic game fish such as marlin, sailfish and mackerel. Recently, however, diving charters have become popular, particularly from Coral Bay.

## 10.2 CONCESSIONS

A commercial concession is a "right granted by way of lease, licence, or permit for occupation or use of part of an area of land or water entrusted to the Department, for the purposes of provision of appropriate facilities and services for visitors' use and enjoyment".

Departmental policy on commercial concessions will apply to the Ningaloo Marine Park.

Each proposal for a concession in a park by way of lease or licence is considered by the Policy Directorate and requires approval of the National Parks and Nature Conservation Authority and the Minister. It is necessary for the concession to conform to the management plan, or, if there is no management plan it must meet the requirements for a "necessary operation" under the CALM Act.

Commercial concessions do not encompass the activity of fishing, which is controlled under the Fisheries Act.

Wherever development of commercial activities is proposed, a judgement is made whether the activity should be managed by the Department itself or by commercial concession. The Department is likely to undertake those commercial activities which:

- i) require special care and management skills to avoid damaging the environment or interfering with other Park users;

- ii) have special educational or interpretive values which are unlikely to be dealt with satisfactorily by a private operator;
- iii) are likely to require a direct or an indirect subsidy if operated by a private agency.

Concessions will be allowed only if they are consistent with the purpose of the Park and consistent with the preservation of environmental values. They must not impinge upon rare or fragile ecosystems or impair key features of the landscape, or increase visitor pressure to an unacceptable level. They must not detract from the reasonable enjoyment of the park by the public.

The use of the facility or service provided by a concession should enhance the appropriate use and enjoyment of the Park and should ameliorate the impact of visitors.

All concession rights will be subject to conditions which may include specification of the requirements and standards of services and goods to be provided (eg. aesthetic standards, safety standards, hours of operation, restrictions on litter generating products, etc).

Advertising or promotion of a concession will be in harmony with the values of the Park and by approval of the Department.

#### 10.2.1 Marine

Any operation which is run on a commercial basis in the Park, eg. dive tours, glass bottom boat tours, fishing charters, will be subject to requirements set down by CALM for the operation of a concession. This may involve permits which define the conditions and areas of operation. Some commercial operations already occur in the Park.

There have been tentative proposals for floating structures to provide accommodation or serve as bases for marine recreation. Moored floating structures will be subject to particularly stringent conditions and to environmental assessment procedures.

All vessels, moored structures, navigation aids, and operations at sea will need to be subject to approvals from the Department of Marine and Harbours, as well as to concession permits issued by CALM.

#### 10.2.2 Onshore

For the purposes of this plan, "onshore" refers to those portions of land reserved under the Land Act as a reserve for Marine Park, or land immediately adjacent, ie. pastoral leases, subject to management agreements. The coastal reserves adjacent to the the northern end of the Park will be considered in a management plan for that area. Cape Range National Park has its own management plan in place.

Onshore developments of a commercial nature relate particularly to marina and associated developments, but may include bases from which offshore concessions operate and leases for the operation of equipment hire services or other commercial services.

The only onshore development at present is a fishing lease with a processing facility at the southern boundary of Warroora station.

Proposals for onshore commercial concessions will be subject to environmental assessment procedures. Marina and accommodation developments may be subject to approvals from other State and Local Government authorities.

### 10.3 PETROLEUM EXPLORATION

Three offshore permits established under provisions of the State *Petroleum (Submerged Lands) Act* occur in the Park. They are TP/3 Parts 2 and 3 and TP 9. Permits EP 325 and EP 342 in Exmouth Gulf are established under the *Petroleum Act* (Fig. 3). The outer portions of TP/3 parts 2 and 3 are in Commonwealth waters under provisions of the Commonwealth *Petroleum (Submerged Lands) Act*. Exploration permit EP 325 was granted in November 1987 and EP 342/TP 9 in May 1989. The other permits preceded declaration of the Park.

Two onshore petroleum exploration permits, EP41 and EP166, extend over portions of the coastal reserve for Marine Park adjacent to the pastoral leases.

The *Petroleum Act* and the *Petroleum (Submerged Lands) Act* regulate petroleum exploration. The Minister for Mines may, however, impose conditions on these activities and they would also be subject to environmental impact assessment under the *Environmental Protection Act*. Government policy on this issue is under review.

### 10.4 AIRCRAFT

The Ningaloo Marine Park and Cape Range National Park are spectacular to view from the air. Aircraft, however, have the capacity to impair the recreational experiences of people on the ground or water.

The potential for an increase in scenic flights over the reef and Range is high. The airspace above the Reef is defined in the CALM Act as part of the Park.

### 10.5 MARINE POLLUTION

Ships occasionally enter or pass through the Park. At Point Murat, petroleum products and other supplies are off-loaded at the Naval jetty. Procedures have been established in accordance with requirements set for discharging petrochemicals, should an accidental spillage occur. The occurrence, if any, of transporting toxic chemicals through the Park is unknown.

The State Committee for Combating Marine Oil Pollution has prepared a State counter disaster plan for pollution of the sea and inland waters, which sets down the procedures and actions to be followed in the event of a spill. The U.S. Navy has prepared a contingency plan for Point Murat which incorporates consideration for local conditions. This plan is approved by the State Committee.

Charter and other boats load fuel in the Park by various methods depending on facilities available. Spills have occasionally occurred.

The extent of the discharge of bilge and other wastes in the Park is not known, however, some boats are defouled with copper sulphate which is toxic to marine invertebrates. The use of more toxic chemicals used for defouling hulls or internally in boats and ships is unknown but could constitute a potential problem, particularly if industrial-type activities occur at the proposed Exmouth Marina.



## 10.6 IMPLICATIONS FOR MANAGEMENT

\* The extent of fish stocks and their ability to sustain amateur and commercial use is not yet known. Research by CALM and the Fisheries Department is underway to determine this.

\* Several fishermen have for some years earned a substantial part of their income from commercial fishing in areas recommended in this plan for Recreation or Sanctuary zones. Some methods of fishing give rise to conflict with fishing and other recreational activities. Commercial fishing in Sanctuary Zones will not be permitted and will be phased out in Recreation Zones.

\* Petroleum exploration in the Park may impair environmental values and interfere with public use of the Park unless stringent environmental management conditions are maintained. Government policy on this issue is under review.

\* Ningaloo Marine Park has considerable revenue earning potential as a tourist resource.

\* Scenic flights over the Park may require management so that undue disturbance to other Park users may be avoided.

\* Commercial onshore and offshore developments in the Park, intended to provide services to visitors, may have detrimental environmental effects unless adequately designed and managed.

\* All commercial operations, including charters, tours, services and facilities, will be subject to CALM policy on concessions and permits issued by the Department.

\* Unlimited and uncontrolled use of the Park by large numbers of visitors may impair environmental values and degrade natural resources. Promotion of the Park's attractions should not exceed the capacity of management to cope with increased numbers of visitors.

\* Correct procedures for transfer of fuel in the Park and disposal of wastes need to be fully understood by ship and boat operators.

\* The use of toxic chemicals for cleaning boats or any other purposes in the Park should be prohibited.

\* Procedures for dealing with spills should be applicable to the particular conditions experienced in the Park.

## 11. HISTORIC VALUES

### 11.1 ABORIGINAL HISTORY

Surveys have determined that a number of sites indicating Aboriginal occupation are scattered along the coast. Material dated from one site indicates occupation as long ago as 23,000 years Before Present. This makes the site one of the oldest based on a marine economy in Australia.

### 11.2 HISTORIC SHIPWRECKS

A number of shipwrecks have been discovered in the Park (See Table 2). Shipwrecks have an intrinsic

interest and attraction to many people and any wreck that is visible will usually attract close inspection. Wrecks such as the *Mildura*, *Fin* or *Perth* which are visible from the shore or boat, are not readily vulnerable to pilfering as these have deteriorated into rusting hulks. Onshore impacts in sand dunes and in parking areas is of greater management significance, particularly at North West Cape. All wrecks are protected by legislation (see 4.5).

Where material of archaeological value may remain hidden in the seabed surrounding older wrecks such as the *Rapid*, legislative protection needs to be supported by education programs. Such programs raise awareness of the value of sites and the need for protective regulations in the community.

**Table 2. Historic Shipwrecks in Ningaloo Marine Park.**

NAME OF VESSEL	TYPE	DATE OF WRECK	LOCATION
<i>Rapid</i>	366 ton wooden ship	1811	22°- 44'S 113°- 41'E
<i>Ollices</i>	Galley	1811	North of Point Cloates
<i>Caledonia</i>	Galley	1815	South of Point Cloates
<i>Correo d' Azia</i>	Brigantine	1816	Point Cloates
<i>Occator</i>	145 ton Brigantine	1856	Unknown
<i>Brothers</i>	16 ton Schooner	1867	South of Coral Bay
<i>Emma</i>	116ton Schooner	1867	South of Point Anderson
<i>Strathmore</i>	450 ton Barque	1870's	Unknown
<i>Fairy Queen</i>	Pearling Schooner	1875	21°- 49.2'S 113°-1.5'E
<i>Bertha</i>	Cutter	1874	Point Cloates
<i>Stefano</i> <sup>1</sup>	875 ton Barque	1875	Point Cloates
<i>Perth</i>	499 ton iron steamship	1887	22°- 41.4'S 113°- 8E
<i>Ada May</i> <sup>2</sup>	3 ton Cutter	1889	Point Anderson
<i>Courteous</i>	Iron steamship	1897	Unknown
<i>Zvir</i>	Iron steamship	1902	22°- 36.1'S 113°- 37.1'E
<i>Mildura</i> <sup>2</sup>	Iron steamship	1902	North West Cape
<i>Fin</i>	Iron whale catcher	1923	22°- 39'S 113°- 38.0'E
<i>Chofuku Maru</i>	Freighter	1931	Norwegian Bay

### 11.3 COASTAL HISTORY

The anecdotal history of settlement and development of the pastoral industry is interesting but not directly relevant to this Plan. The associated development of navigation aids for coastal shipping is of historic relevance, however, beginning with the construction of lighthouses at Point Cloates and Vlamingh Head.

#### 11.3.1 Lighthouses

The lighthouse and keeper's quarters at Vlamingh Head were constructed in 1912. It was the first landmark for ships from Singapore and other Oriental ports travelling down the west coast of Australia. The light was decommissioned in 1967. The structure remains in sound condition and the internal workings are intact. The lighthouse is Commonwealth property, however, it is intended to be transferred to the State to be part of the Park. The keeper's house and surrounding land have been privately owned since 1986.

The lighthouse and keepers' quarters at Point Cloates were erected soon after those at Vlamingh Head. Unfortunately they were constructed on top of a parabolic sand dune which subsequently became unstable. This led to a steel framed lighthouse being constructed in 1936 on Frazer Island, a sand cay in Norwegian Bay. Frazer Island also proved to be unstable; the sand has since moved northward leaving the structure behind in open water. In the 1950s an automatic light was constructed south of the original Point Cloates lighthouse. The lighthouse and keepers' quarters, though in ruins and difficult to get to, attract many people who are interested in its history.

### 11.3.2 Whaling Station

Whaling began at Norwegian Bay in 1913, using factory ships. In 1915, whale processing facilities were constructed onshore, but only operated for one year before being closed down. Whaling recommenced in 1922, changed ownership in 1925 and ceased in 1929 when the company went into liquidation. In 1944, the station was devastated by a cyclone. It was resurrected in 1949 and new equipment installed. A reduction of whale quotas forced the closure of the station in 1957 and much of the equipment was moved to Camarvon.

The whaling station remains have since deteriorated through natural processes. Deterioration has been greatly accelerated by campers pilfering timber for camp fires and items of interest.

## 11.4 IMPLICATIONS FOR MANAGEMENT

\* The various facets of offshore and onshore cultural history are of great interest to visitors. Where sites of historic interest can be visited without degrading them, information should be provided. Development of facilities and provision of information will need to be matched with the level of management capability and vulnerability of sites to degradation.

\* Where access is to be encouraged such as at Vlamingh Head, site facilities such as parking and information, will be required. These should be carefully designed to minimise environmental impact.

\* The environmental setting and design of recreation facilities will, in general, require careful site analysis to avoid impairment of historic values.

## 12. RESEARCH

The ecology of the reef and the population dynamics of organisms which play key roles, is not fully understood. The frequency and extent of disturbance by natural occurrences (eg. cyclones, temperature and current changes, periodic predation, is not known.

There is an urgent need for baseline data on reef community structure and natural rates of change. Only when such information is available may impacts of human use be judged.

With the assistance of Commonwealth grants, CALM has commenced a research program in the fields of physical oceanography and marine biology, aimed at providing baseline data to aid future management.

The oceanography program gathers data on tide, water temperature, currents, wave energy, and meteorology. The aim of the program is to develop a water circulation model for the lagoon and to

provide a comprehensive physical data set which will facilitate further research. Analysis of data for the 1987-88 period should be completed shortly.

The marine biology program has obtained baseline data on population density of certain fish species in fished and unfished areas. This part of the programme seeks to determine the impacts of recreational fishing and the values of management techniques such as zoning to manage fish stocks in the Park.

The marine biology program has also sought to determine the distribution of corals and other invertebrate species and communities within the Park and to map those areas which are particularly attractive to visitors or particularly vulnerable to damage by overuse. Special attention is being directed to mass spawning of corals and the population biology of certain coral predators. Baseline data are being gathered on the proportion of live and dead corals in different habitats and the conditions which determine this.

The Fisheries Department is undertaking a tagging program to determine the movement of north west snapper (*Lethrinus nebulosus*) between deep oceanic and shallow lagoon waters in the Park. The objective of the program is to determine the extent, if any, to which recruitment of fish species to the Reef will be affected by commercial fishing in the adjacent ocean. This will assist in understanding the relationships between populations of the species and the potential impact of recreation and commercial fishing.

#### 12.1 IMPLICATIONS FOR MANAGEMENT

- \* In view of the limited knowledge of the flora and fauna of the Park or, the population dynamics of species which play key ecological roles or which are target species of fishermen, early attempts at management are likely to be inadequate for long term needs.
  
- \* Research into the basic ecology of the Reef and the biology of key individual species, is necessary for management.
  
- \* Research into patterns of use in the Park will be an essential requirement for planning.

**PART 2.**  
**MANAGEMENT STRATEGIES**

## 13. MANAGEMENT GOALS AND OBJECTIVES

The fundamental management goals and objectives of marine parks are derived from the CALM Act:

*"to fulfill so much of the demand for recreation by members of the public as is consistent with the proper conservation and restoration of the natural environment, the protection of indigenous flora and fauna and the preservation of any feature of archaeological, historic or scientific interest".*

In the context of this management plan, the following principal goals and objectives apply to the State waters and land reserved the Ningaloo Marine Park. The principal goals for management of Ningaloo Marine Park are:

### CONSERVATION:

Conserve marine species, marine ecosystems and natural, historic and cultural features;

### RECREATION:

Facilitate public enjoyment of the Park to the extent compatible with conservation of its natural environment;

### EDUCATION:

Create an awareness and understanding of the marine and coastal environment and the limitations on their use.

The objectives of management of the Ningaloo Marine Park are:

1. To manage State and Commonwealth areas as one Park.
2. To integrate management and development of the Park with adjacent areas of land to achieve maximum effectiveness and optimum allocation of management resources.
3. To manage adjoining coastal land so that access to the Park is achieved with minimum disruption to the rights of adjoining landholders.
4. To conserve native species, habitats and natural processes.
5. To provide recreational opportunities and facilities which maximise the quality of experience sought by visitors.
6. To promote an appreciation and understanding of the marine environment and sites of cultural significance in the Park, through information, interpretation and education.
7. To manage recreational and commercial fishing without adversely affecting fish populations.
8. To provide for tourism, to the extent consistent with maintenance of resources.

9. To ensure that all development and activities are consistent with the maintenance of species populations, habitats, natural features, and cultural and scenic values.
10. To conduct research programmes aimed at understanding how impacts of use and natural processes affect the maintenance and management of the Park.

## 14. MANAGEMENT STRATEGIES

### 14.1 MANAGEMENT ZONING

Zoning separates a park into discrete management units which reflect the characteristics of natural resources and prescribes priorities for their use. Zoning attempts to minimise conflicts arising between users and it protects inherent values of the Park. It does this by separating potentially conflicting uses and activities into different areas. This separation is also influenced by the relative needs of the community as a whole. As the community expresses different needs over time, the relative division of the Park into different zones may also change. For example, if an area currently used for fishing becomes very popular for diving and photography, the zoning of that area may change to reflect its demand for a new priority use.

Activities are therefore defined and regulated within each zone. Regulations which apply to management of each zone will be promulgated from time to time principally under the *Wildlife Conservation Act 1950*, the *Conservation and Land Management Act 1984* and the *Fisheries Act 1905*.

#### 14.1.1 Zoning Framework

A simple framework for zoning has been developed for the Park.

#### **GENERAL USE ZONE:**

Provides for commercial and recreational uses consistent with conservation of natural resources. Conservation implies fishing within the sustainable limits of natural resources.

#### **RECREATION ZONE:**

Provides for recreational uses consistent with conservation of natural resources. Commercial fishing is not permitted. Commercial concession operations for recreation activities may be provided where there is no conflict with other uses.

#### **SANCTUARY ZONE:**

Provides for recreational uses consistent with the protection of natural resources. (Essentially a look, but don't-take zone). Commercial concession operations for recreation activities may be provided where there is no conflict with other uses.

Restrictions on certain activities including the type of equipment or gear used, the method of fishing, and the taking of certain species or classes of animals, may apply over the whole or any declared part of the Park.

Research in all zones will be subject to permit, however, certain extractive or manipulative research techniques may not be allowed, particularly in Sanctuary Zones.

The occurrence of special events (eg. seabird breeding) or incidents requiring restrictions on access (eg. shipwrecks) may determine that additional defined areas will be declared under Section 62 of the CALM Act for a specified period of time.

The placement of moorings in Sanctuary Zones will not be allowed by individuals but may be installed by CALM where there is a specific need for management.

Where conflicts arise between recreation uses, separation or exclusion of uses will be made by designating particular areas with priority given to particular uses (see 17.5).

#### 14.1.2 Criteria for Determining Zones

Selection of the management zones has been based on the priority-order criteria of:

**i) Representativeness of the Reef system for biological diversity and structural variability (Sanctuary Zone).**

The Reef is biologically and structurally variable throughout its length and many species of marine life are at their limit of geographical distribution and do not occur over the whole Reef. The morphology of the Reef is also quite variable which also affects the distribution and abundance of fauna and the degree of attractiveness for recreational use. Representative areas of high biological and structural diversity have priority for non-exploitative uses.

**ii) The degree of attractiveness and accessibility of the Reef for recreational use (Recreation Zone).**

The Reef extends offshore in places over six kilometres and it is mostly accessible for recreational use. It therefore has priority use for recreation including commercial concessions for recreation activities.

**iii) The potential for recreational and commercial use which is not in conflict with other uses or protection of conservation values (General Use Zone).**

The oceanic waters of the Park outside the Reef have limited commercial fishing at present. However, their potential is unknown.

#### 14.1.3 Application of Zones

The broad principles of zoning to be applied in the State waters of the Park are:

**SANCTUARY ZONE:**

Sanctuary Zones begin at HWM and extend offshore to 100 metres beyond the reef. Sanctuary zones will vary in accordance with the structure and biological diversity of the Reef.



Whilst there is a theoretical basis for extending one or more sanctuary zones seaward of 100 metres beyond the reef to encompass deep water habitats, no data exist at this time to support this. Moreover, as the waters and seabed beyond the reef are part of the Park, management controls can be invoked if necessary, which will prevent deleterious impact on benthic and pelagic fauna .

Sanctuary Zones serve as:

- i) special viewing areas where flora and fauna may be observed free of any form of interference;
- ii special protection areas for wildlife (eg. nesting or nursery areas);
- iii) reference areas for scientific study;
- iv) replenishment areas which may provide recruits to re-populate other areas which are over-fished or have become degraded.

Eight Sanctuary Zones have been determined according to the above criteria and are illustrated in detail on Figures 6(1) to 6(8). In addition to these general functions, each of the zones may have more specific purposes. Bundegi (Fig. 6(1)), Mandu (Fig. 6(3)), and Maud (Fig. 6(7)), Sanctuary Zones are very accessible and provide many opportunities for visitors to view undisturbed Reef communities. Mangrove Sanctuary (Fig. 6(2)) contains the only area of tidal mangrove community in the Park and is important as a nursery area for marine life. It is also important to wading birds for feeding and roosting and it has a high potential for educational and interpretive uses.

Osprey (Fig. 6(4)), Cloates (Fig. 6(5)) Maud (Fig. 6(7)) and Pelican (Fig. 6(8)) Sanctuary Zones function as important reference areas as they contain high diversity of habitats important for understanding how the Reef communities function. Dugong (Fig. 6(6)) and Cloates (Fig 6(5)) Sanctuary Zones are the most important areas in the Park for dugong which graze on the seagrass beds in each zone.

#### **RECREATION ZONE:**

Recreation Zones encompass the remaining portions of the lagoon and reef environment not determined as Sanctuary Zones (see Fig. 6 a and b).

Recreation Zones will:

- a) extend for 1000 metres offshore from HWM where there is little or no outer reef; and
- b) extend from HWM to 100 metres seaward of the reef front and includes passages in the reef; and
- c) encompass all waters generally east and south of Point Murat up to approximately 3 nautical miles east of Bundegi Reef; and
- d) include discrete wedges adjacent to Osprey, Cloates and Maud Sanctuary Zones.

The priority for use in these areas is recreation activities free from commercial fishing. Commercial charter vessels operating under a concession permit carrying recreational fishermen may operate there provided that the Recreation Fishing Guidelines administered by the Fisheries Department and other requirements for the Zone are complied with (see 18.2).

#### **GENERAL USE ZONE:**

Encompass the remaining area of the Park not defined for either Sanctuary or Recreation Zone. Recreational and commercial activities permitted in the Park can take place in this zone.

# NINGALOO MARINE PARK (State Waters) MANAGEMENT ZONES

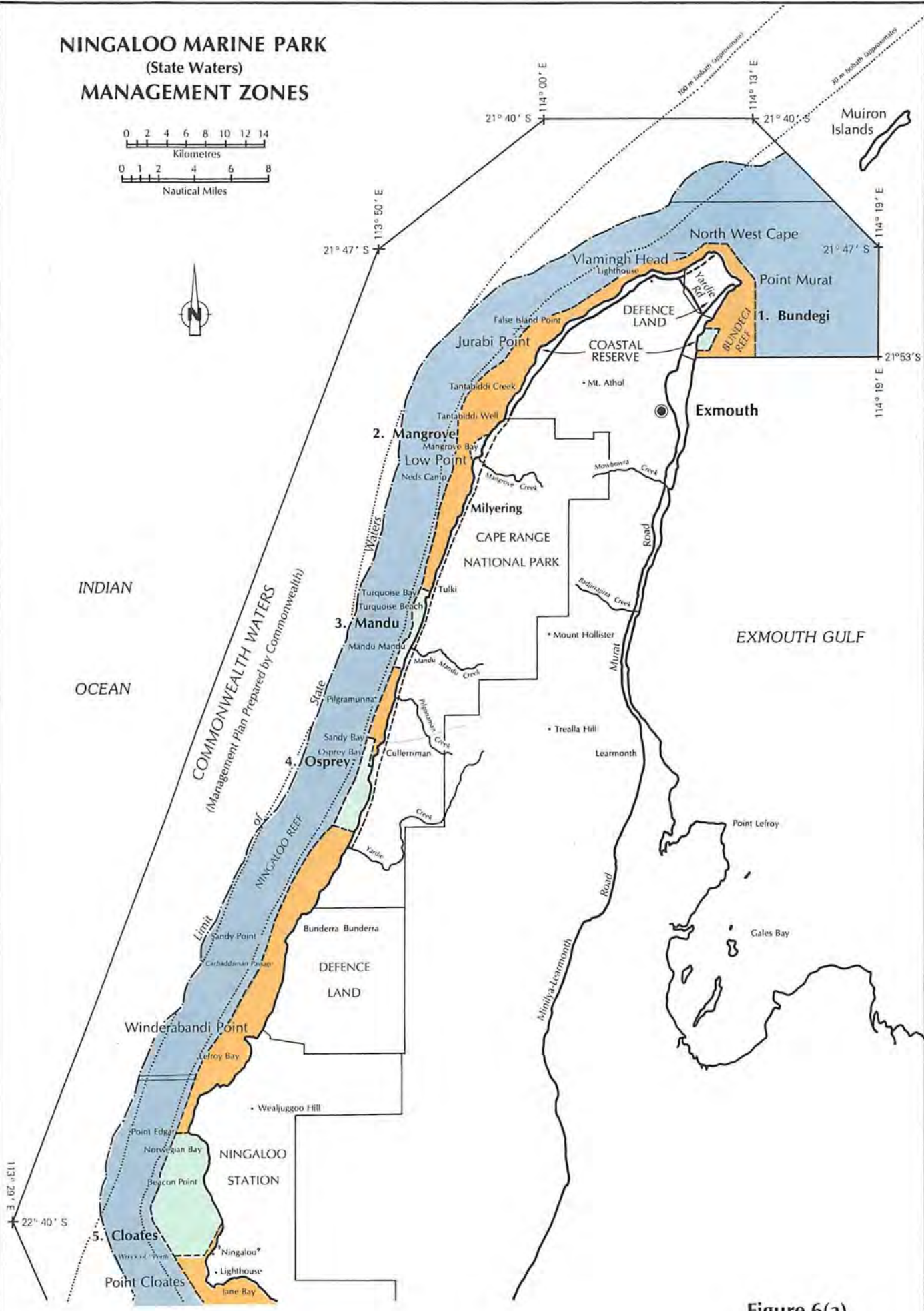
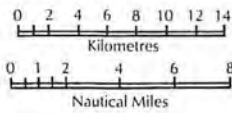


Figure 6(a)

(JOINS FIGURE 6(b))

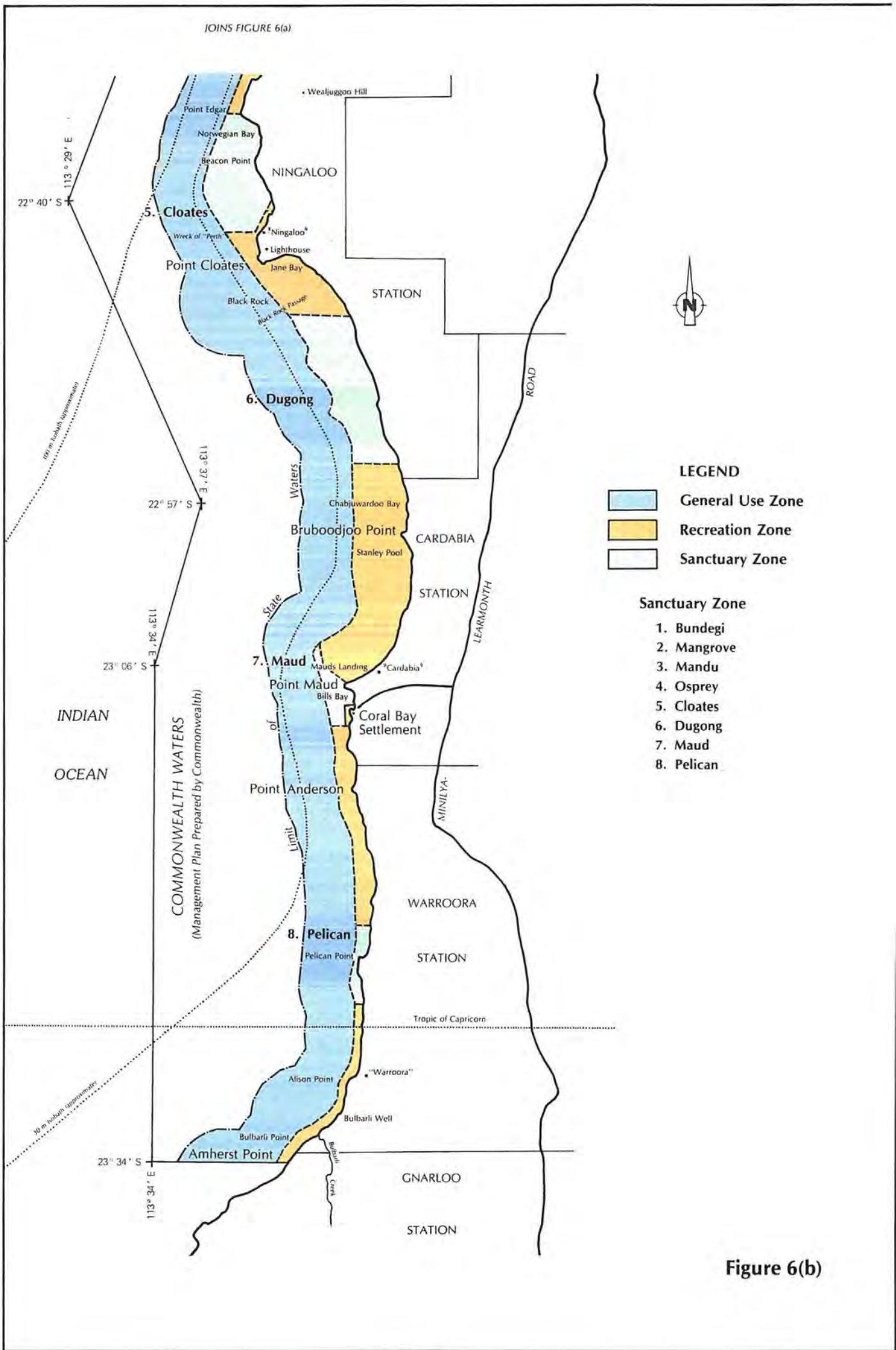
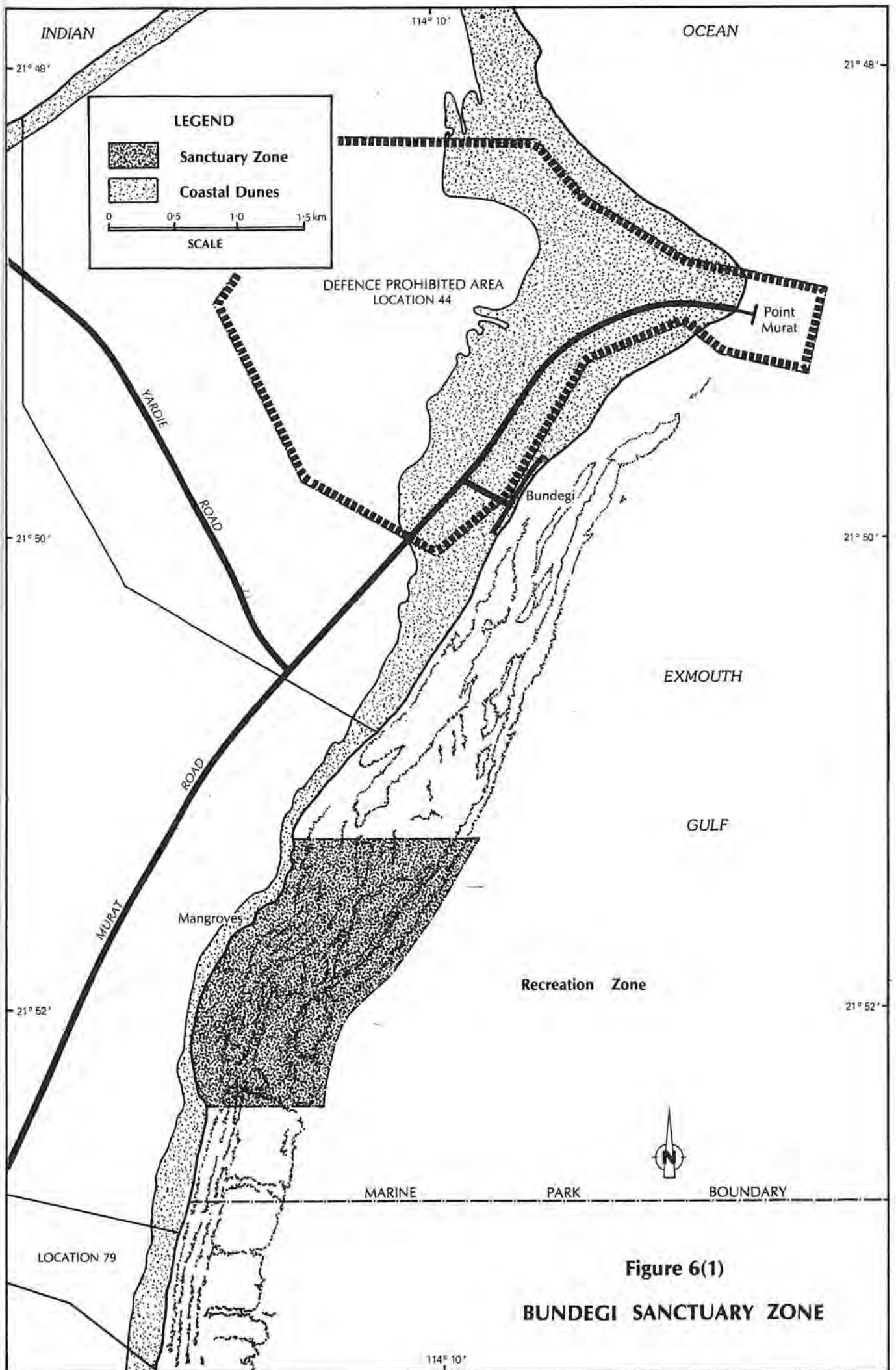


Figure 6(b)



**Figure 6(1)**  
**BUNDEGI SANCTUARY ZONE**

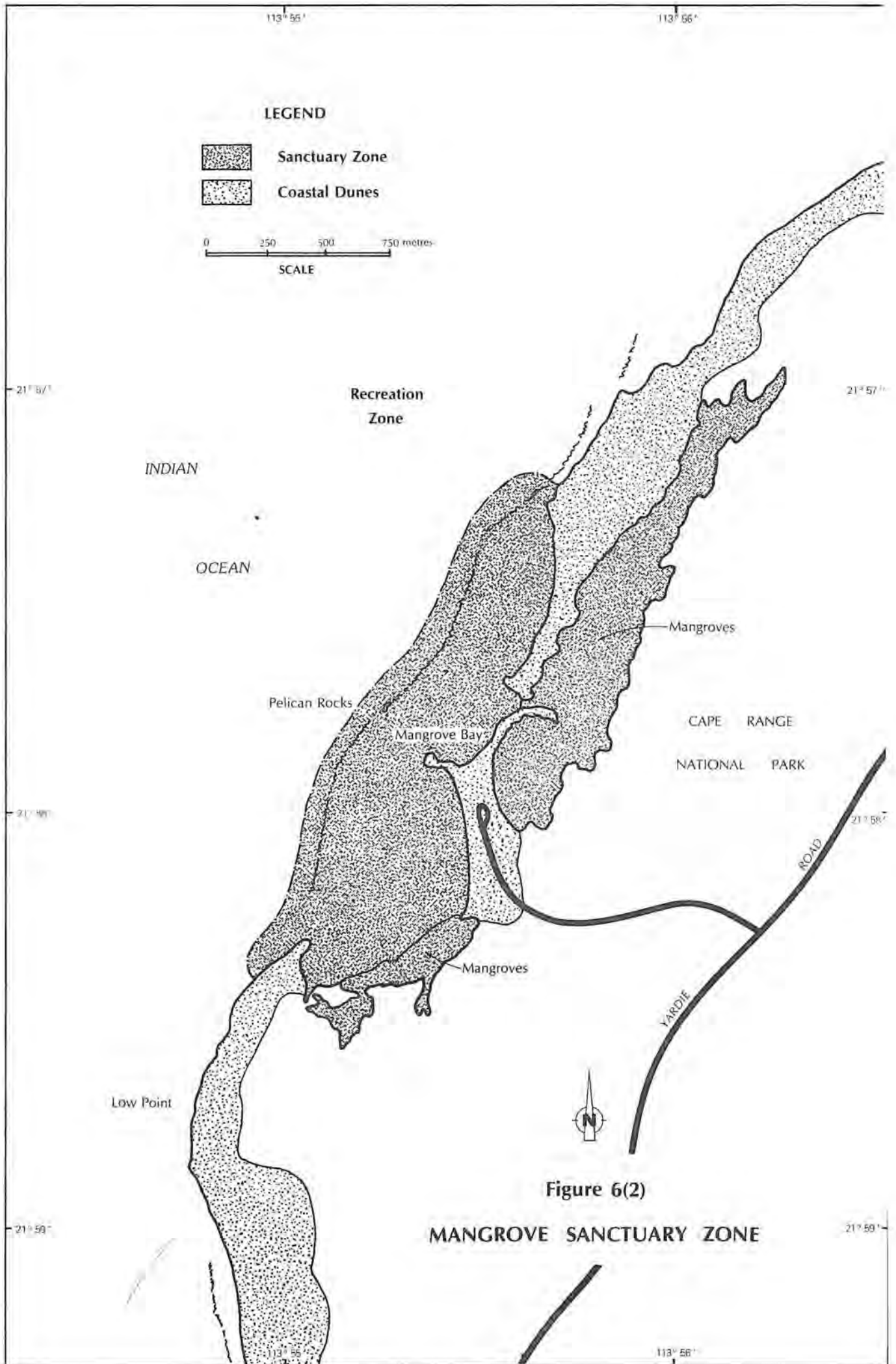


Figure 6(2)

**MANGROVE SANCTUARY ZONE**

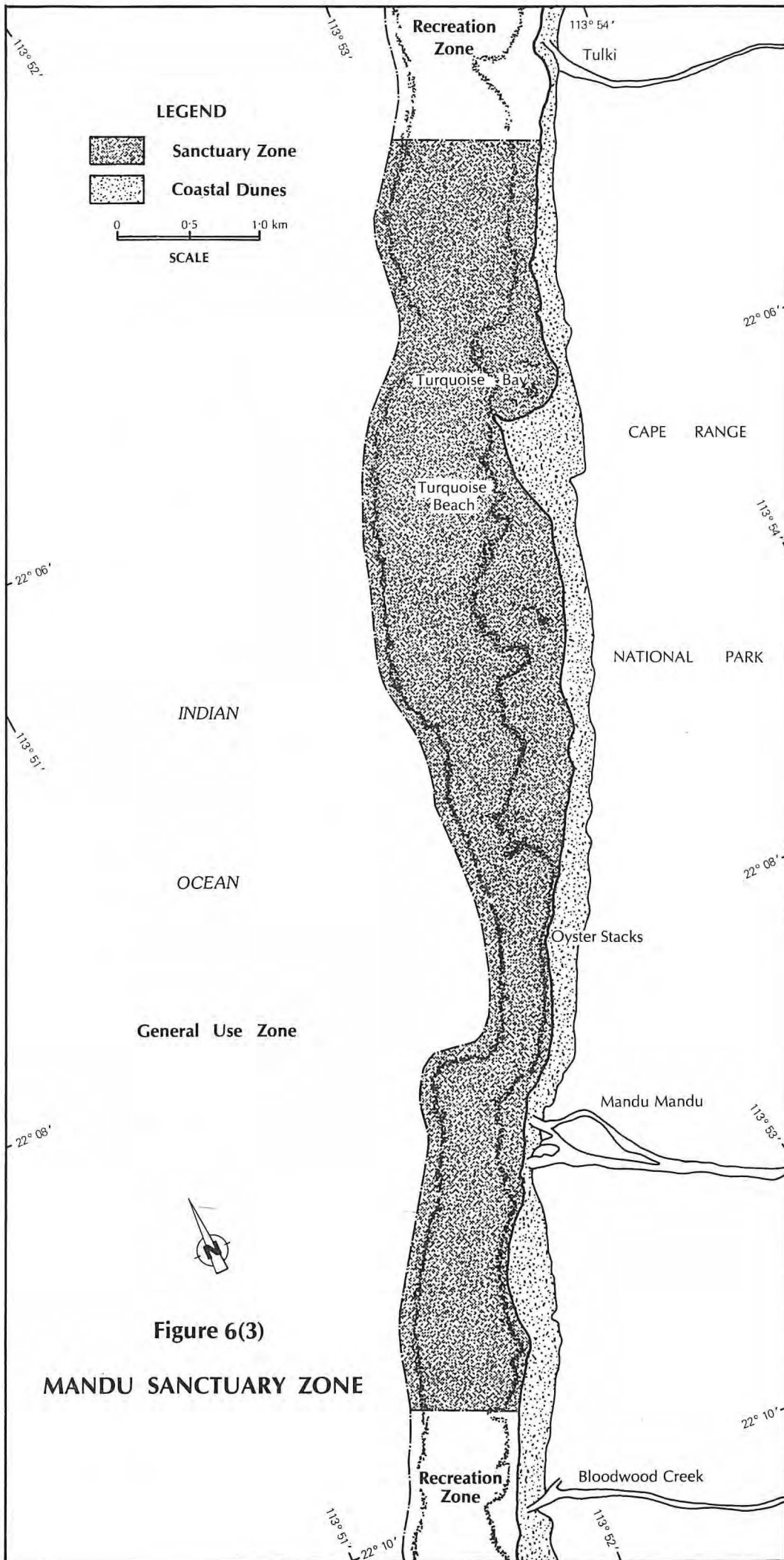


Figure 6(3)

MANDU SANCTUARY ZONE

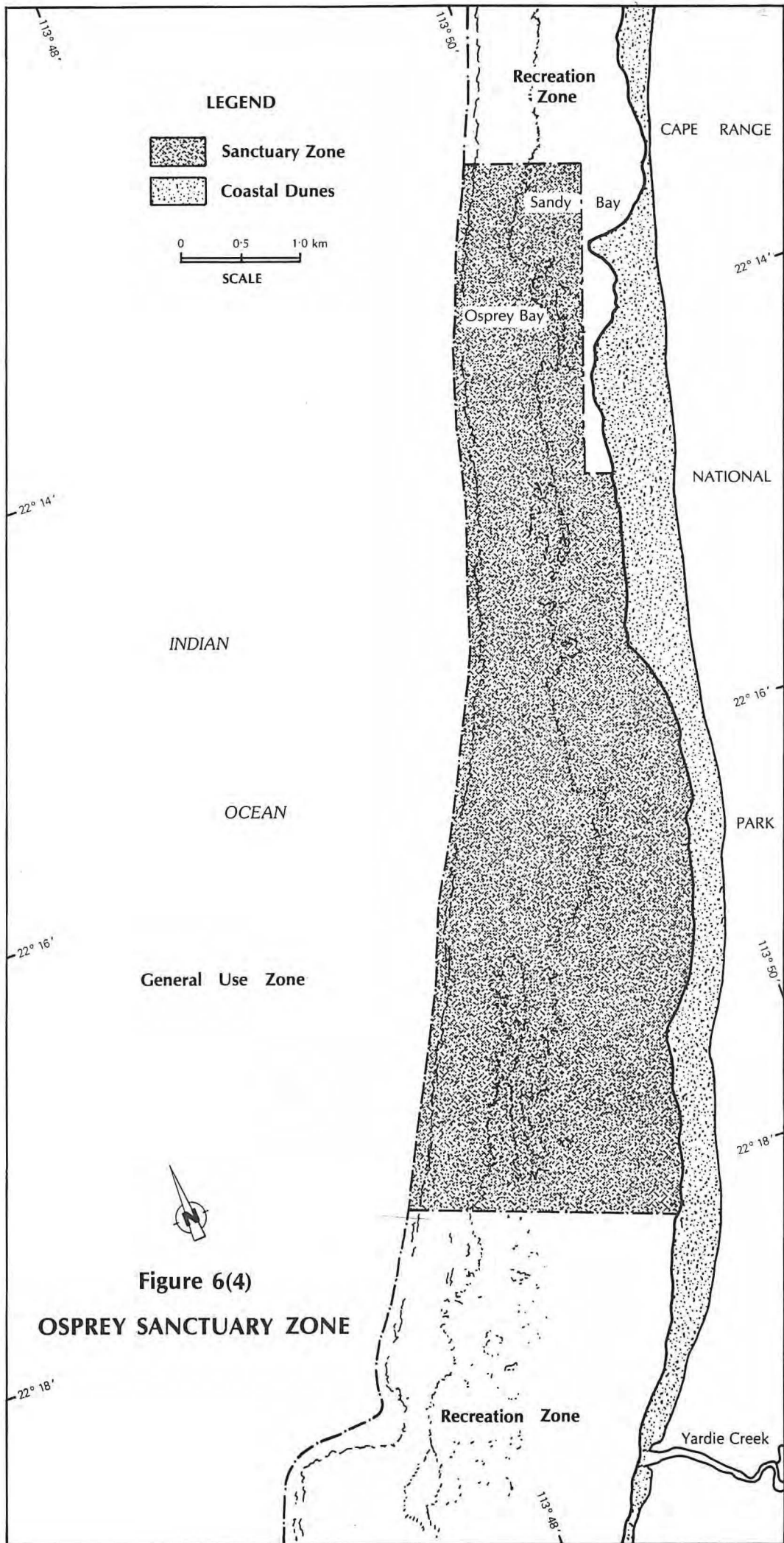
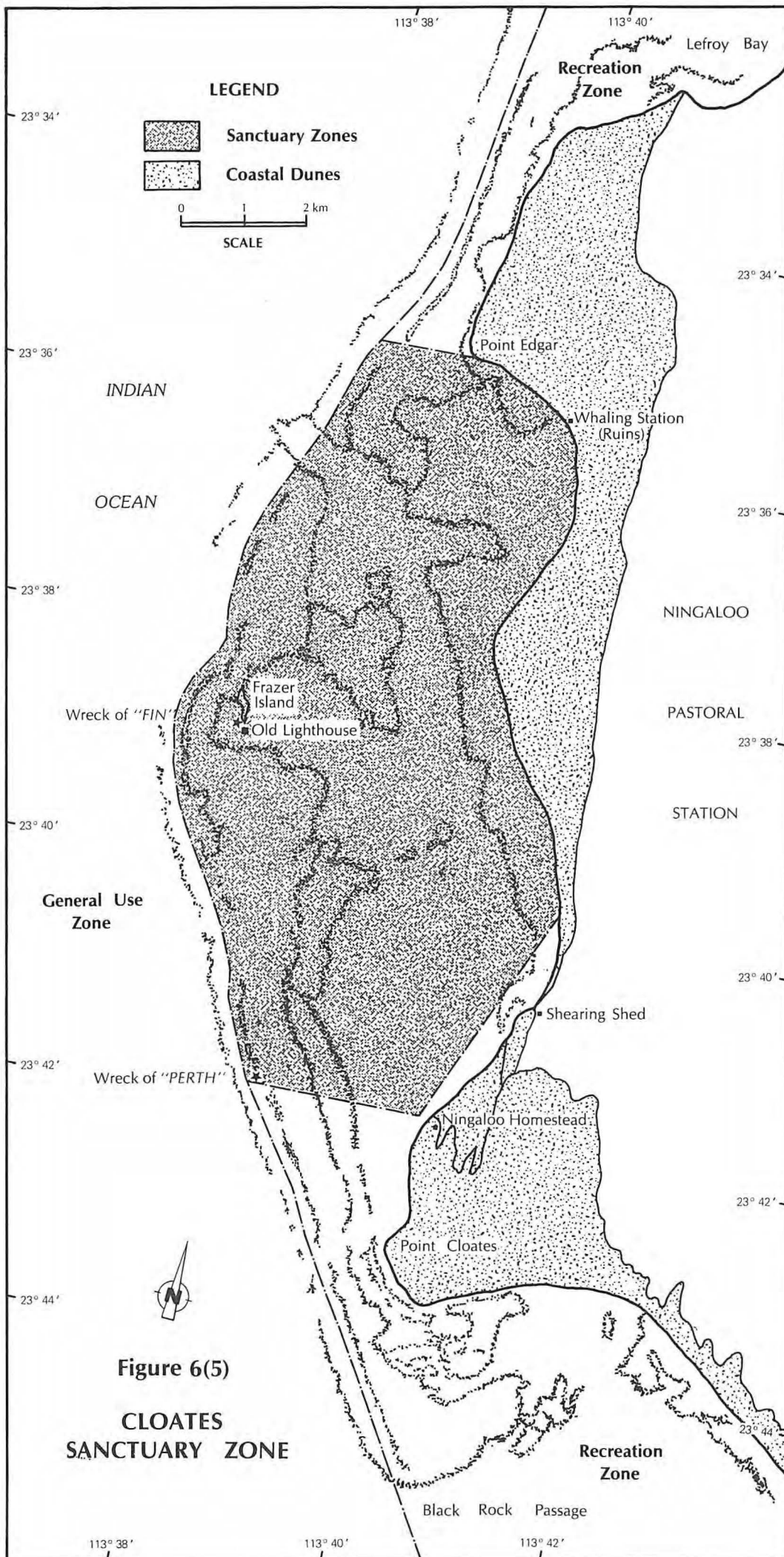


Figure 6(4)

**OSPREY SANCTUARY ZONE**



**Figure 6(5)**  
**CLOATES**  
**SANCTUARY ZONE**



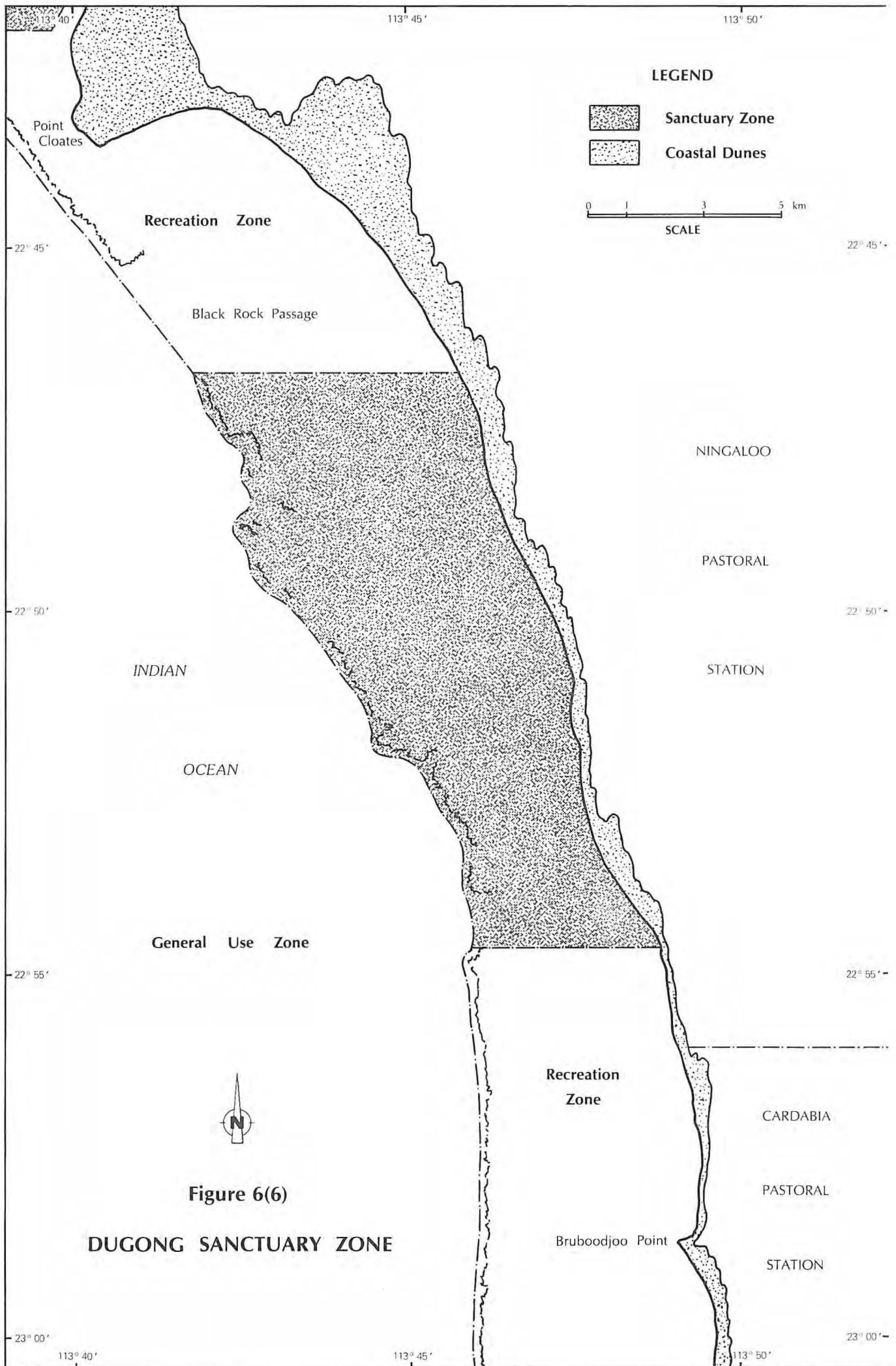
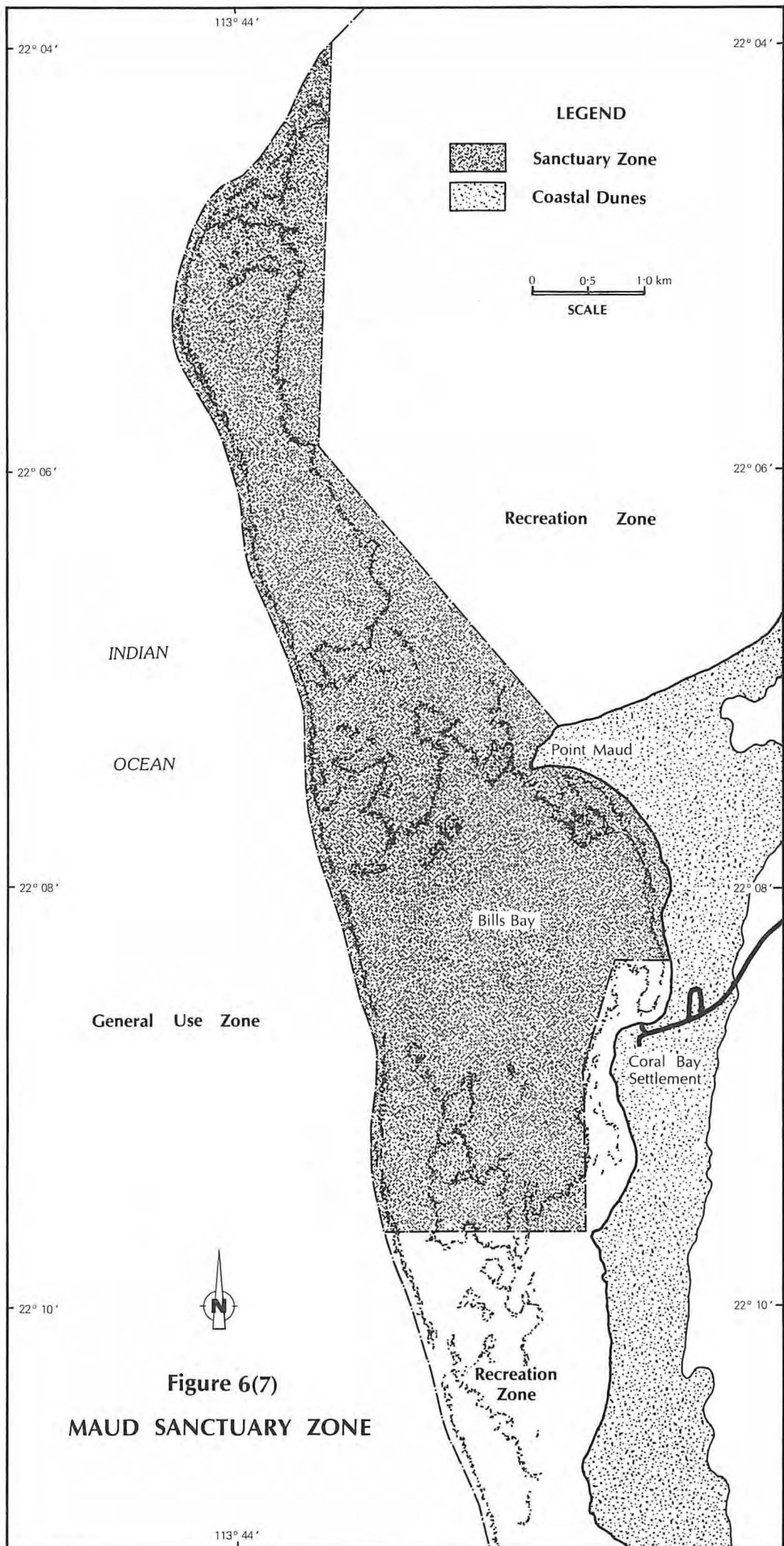
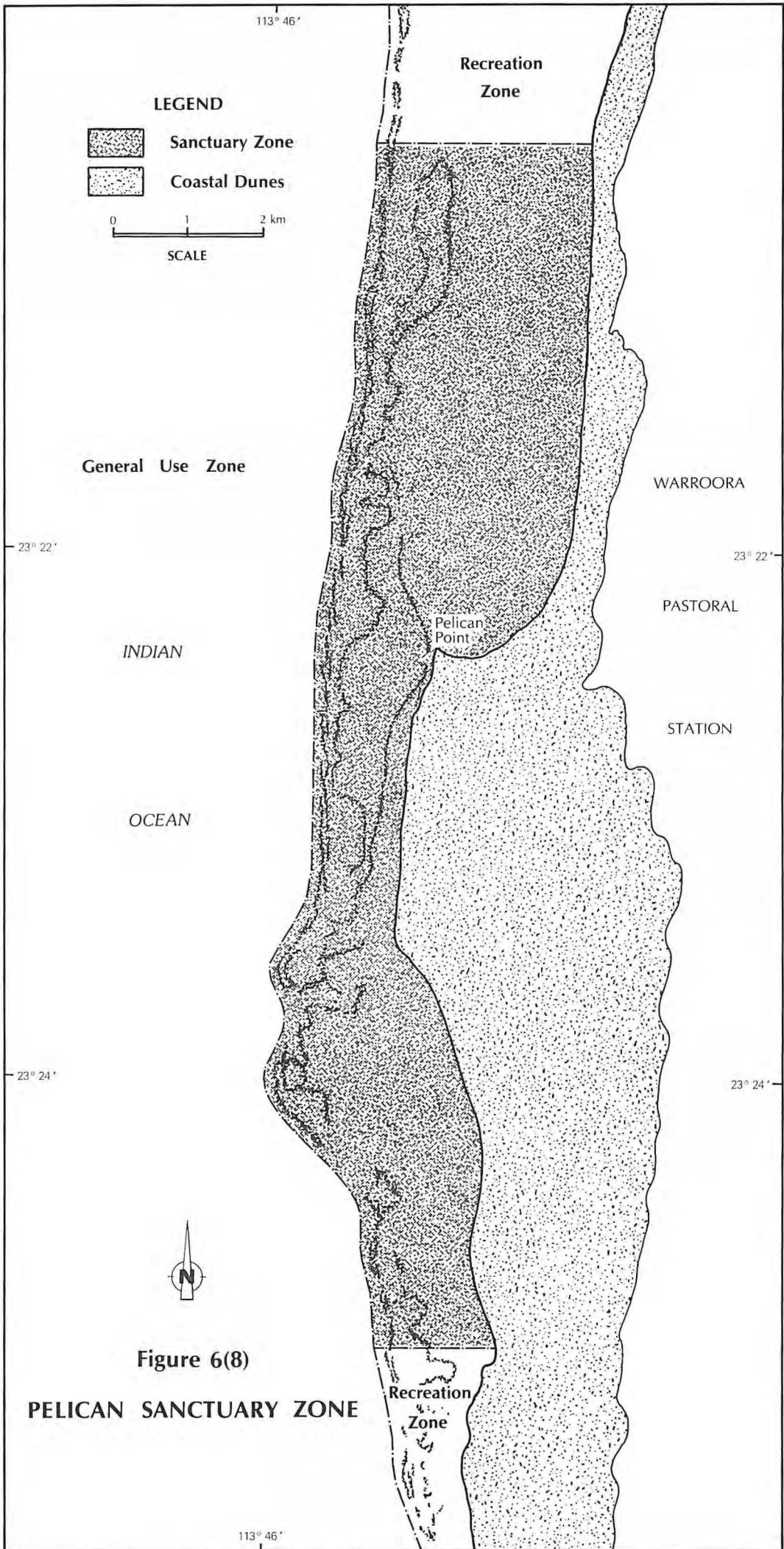


Figure 6(6)

**DUGONG SANCTUARY ZONE**



**Figure 6(7)**  
**MAUD SANCTUARY ZONE**



**Figure 6(8)**  
**PELICAN SANCTUARY ZONE**

Details of each of the above zones are illustrated in Figures 6(a) and 6(b) and Figures 6(1) to 6(8). A matrix of permitted uses and activities in each zone are listed in Table 3.

Regulations which apply to management of each zone will be promulgated from time to time under the *Wildlife Conservation Act 1950*, *CALM Act 1984* and *Fisheries Act 1905*.

***Prescriptions***

- 1. Implement the zoning plan described above and illustrated in Figures 6(a and b) and 6(1) to 6(8) inclusive.***
  
- 2. Proclaim regulations for management of activities and use in the Park consistent with the intention of the zoning plan.***
  
- 3. Changes to Table 3 be prepared for approval by the NPNCA.***

**Table 3. Permitted uses and activities in the Park**

ACTIVITIES	ZONES		
	GENERAL USE ZONE	RECREATION ZONE	SANCTUARY ZONE
<b>Commercial</b>			
Trawling	Licence	NO	NO
Wetlining	Licence	NO	NO
Netting	Licence	NO	NO
Rock Lobster	Licence	NO	NO
Collecting (aquaria/shells)	NO	NO	NO
<b>Recreation</b>			
Rod and line fishing	YES	YES	NO
Trolling	YES	YES	NO
Netting	NO	NO	NO
Mullet Netting (at approved beaches)	N/A	YES	NO
Live Collecting(except listed species)	Permit	Special	Permit
Other Collecting	Special	Special	NO
Spearfishing	YES	Special	NO
Spearfishing on SCUBA	NO	NO	NO
Rock lobster (by hand)	YES	YES	NO
Rock lobster (by pots)	NO	NO	NO
Diving	YES	YES	YES
Motorised water sports	YES	Special	NO
Non-Motorised sports	YES	Special	Special
Cruising Yachts	YES	Special	Special
Boats	YES	YES	YES
<b>Commercial Concessions</b>			
Diving	Permit	Permit	Permit
Fishing Charter	Permit	Permit	NO
Cruising Yachts	Permit	Special	Special
Boating	Permit	Special	Special
Glass Boat viewing	Permit	Permit	Permit
Motorised water sports	Permit	Special	NO
Non-motorised sports	Permit	Special	Special
Research	Permit	Permit	Permit
Shipping	YES	NO*	NO
<b>Facilities</b>			
Moorings	N/A	Permit	Permit
Jetties	N/A	Special	Special
Boat ramps	N/A	YES	Special
Groynes	N/A	Special	NO
Marinas	N/A	Special	NO
Markers	YES	YES	YES
Structures and Platforms	Special	Special	Special

**NOTES:**

*This Table is for guidance only. The contents may change in response to changing circumstances.*

\* Ships (ie. vessels with a gross tonnage in excess of 500) have right of passage to Point Murat Jetty.

**Licence:** Means a written approval issued by the Fisheries Department specifying terms and conditions which may be appropriate.

**Permit:** Means a written form of approval is required which specifies terms and condition of use and any restrictions which may be appropriate. Permits will be administered at different levels for different uses ie. District, Region or Head Office. All research requires a permit and is the only means by which collecting of any flora or fauna is allowed from a Sanctuary Zone.

**Special:** Means provision of a specified area approved for a particular activity and **may**, but not always, require a special permit, licence, contract or lease which would be allowed only under a particular set of conditions. Any commercial activity will require a permit and delineation of area approved for operation. See section 17.2 for prescriptions on collecting.

**N/A:** Not Applicable.

**Cruising Yachts:** Any sailing or motorised vessel with waste facilities and a draft more than one metre.

**Boats:** Any vessel capable of carrying people or goods through the water (but not including hovercraft).

**Live Collecting:** Species which may be taken by hand or other approved method shall be listed in the *Gazette* under the Wildlife Conservation and Fisheries Acts and Regulations.

Restriction may be implemented on fishing in high conflict areas (eg. Coral Bay) and limit fishing to line-only from portion of the shore.

Spearfishing is not permitted in the lagoon and between the outer passages in the reef in Recreation Zones between Tantabiddi Creek and Winderabandi Point.

**Aircraft:** Not allowed below 500 feet (except Military aircraft with notification)

Non-motorised water sports (windsurfing, yachting, etc) may only occur in areas that are permitted for such activities. Where there are conflicts with subsurface use eg. swimming or diving, subsurface uses shall have priority. Motorised water sports (jet-skis water-skiing, power-boat racing, etc) may only occur in areas that are approved for any such activities, which does **not** include wedges of Recreation Zones adjacent to Osprey, Cloates and Maud Sanctuary Zones. Commercial concessions for powered craft may require special permits.

No privately-held moorings, including the use of stakes on beaches, will be allowed in any zone. Anchoring can take place anywhere provided reasonable care is taken to prevent environmental damage, conflict with other users, or to constitute a safety hazard.

## 15. OFFSHORE DEVELOPMENT

### 15.1 NAVIGATION AND OTHER MARKERS

Currently there are no offshore markers to guide boat users through passages, although there are some onshore markers. Marking of channels through dense areas of coral may be required for the safe passage of boats.

Provision and maintenance of markers, including buoys and fixed poles is expensive both for installation and maintenance and will have to be considered carefully before installation. Marking of zones, particularly boundaries of Sanctuary Zones, may be required in most instances. This should always be done in a sensitive manner both on the coast and offshore.

#### *Prescription*

*1. Offshore markers be installed only where there is a demonstrated need and no effective alternative. Aesthetic design and placement will be a major consideration.*

### 15.2 MOORINGS

Permanent or semi-permanent moorings and their floats impinge upon the use of an area and imply right to exclusive use. Location and design of moorings need careful consideration to avoid environmental damage. Many items used for moorings are not appropriate. The use of stakes is a safety hazard and will not be allowed. CALM officers will liaise with the Department of Marine and Harbours on these matters. There is a need for boats, including yachts, to be able to anchor in any zone. Sites chosen for mooring boats should always be selected with care to avoid environmental damage to coral formations, to be a safety hazard to other users, or to place people at risk. Moorings may need to be installed in specific locations where use of anchors present environmental damage, or when greater security is needed than can be provided by anchors.

#### *Prescriptions*

*1. The location and installation of any markers and moorings of a temporary or permanent nature require approval from CALM and only approved materials and designs will be allowed.*

*2. Installation of moorings by individuals for private use will not be allowed.*

*3. Moorings for use by all commercial concessions require approval from CALM.*

*4. Moorings will not be installed except where there is a specific requirement for management. This may include use of such moorings for private vessels or concession operations.*

### 15.3 JETTIES

One jetty constructed at Bundegi is used to service the charter boats operating from the area. A Naval jetty at Point Murat services the needs of the Defence facility and is within the designated Prohibited Area. (See Fig. 6 (1))

Many boats which use the Park are small dinghies which operate effectively from sandy beaches, with no need for jetties or launching facilities. No new jetties are planned for the Park, but in the event that

installation of a jetty is found to be necessary to service tourist concession operations, the cost of design, construction and maintenance may be borne partly or entirely by the commercial operators.

All jetties will need to comply with provisions of the *Jetties Act* (administered by the Department of Marine and Harbours). Design, management and location will require approval from CALM in liaison with Marine and Harbours. The environmental impacts arising from such developments including social and management factors such as extra parking and other facilities will require full consideration.

#### ***Prescriptions***

***1. Design, location and installation of any jetties require the prior approval of CALM and the Department of Marine and Harbours.***

***2. Jetties not be constructed except where there is a specific requirement for management.***

### **15.4 GROYNES AND BREAKWATERS**

Groynes and breakwaters associated with any boat ramp or marina development may have considerable environmental impact. In the event that proposals for marinas or breakwater development are put forward, they should be subject to environmental assessment before approval is given.

#### ***Prescriptions***

***1. Proposals to construct groynes or breakwaters require vigorous environmental assessment.***

***2. Groynes, breakwaters or similar constructions not be constructed in Sanctuary Zones.***

### **15.5 STRUCTURES AND PLATFORMS**

Proposals to place platforms on or adjacent to quality reef areas are likely to occur in the term of this plan. For the most part it is unlikely that these proposals will involve accommodation because of the proximity of the reef to the coast. However, it is possible that tourist operators may wish to place floating platforms which will provide some facility superior to that provided by an access vessel.

#### ***Prescriptions***

***1. All proposals involving the placement of structures on or near reefs shall provide an engineering and operational outline of the facility and be subject to detailed environmental assessment.***

***2. Proposals for structures and platforms be required to meet requirements of CALM***

***3. Structures not be installed in Sanctuary Zones. Proposals for platforms in Sanctuary Zones be subject to assesment of potential environmental impact.***

## **16. ONSHORE DEVELOPMENT**

### **16.1 MARINAS**

Various proposals have been made for the construction of marinas at sites within the Park, at Mauds Landing, Tantabiddi Creek and Bundegi Reef. Various proposals have also been made for marinas outside the Park in Exmouth Townsite.



While marinas provide facilities for concession operations and services to Park visitors, they require consideration of equity to all Park users, environmental impact on natural resources, and the effect of increasing subsidiary management costs of the Park. Sites at Mauds Landing and Tantabiddi Creek offer potential for marine developments likely to provide valuable services to Park visitors.

#### *Prescriptions*

- 1. Construction of marinas in the Park be considered on merit.*
- 2. Any marina development be subject to environmental impact assessment and meet requirements of CALM.*

### 16.2 BOAT RAMPS

Boat ramps at Bundegi and Tantabiddi Creek were constructed in 1987 by the Shire of Exmouth. Designs and funds were provided by the Department of Marine and Harbours.

At Tantabiddi Creek, a small concrete ramp has been replaced by a large rock groyne and ramp. Whilst it now provides for larger boats, it is difficult to use. Large boats, under certain conditions, can be launched at Coral Bay across the sandy beach.

In addition to the ramps at Bundegi and Tantabiddi there is a need for a ramp suitable for launching larger boats in the southern part of the Park. Mauds Landing is identified as a possible location and, should detailed study show this to be the case, construction of a ramp and associated facilities there should proceed when funds become available.

Small boats are launched from any suitable beach in the Park. There are a number of sites along the coast which are suitable for launching boats without the need for any facilities. Potential sites for the minor improvement of existing beach launching or the installation of low-cost, low-impact boat launching facilities include sites at Neds Camp, Osprey Bay, Yardie Creek, Lefroy Bay, Bruboodjoo Point and Coral Bay. Such facilities may be improved or installed at these and other sites during the life of this plan.

#### *Prescriptions*

- 1. All sites used for the launching and retrieval of all water craft be assessed by CALM for environmental impact and either approved for use, modified to ameliorate impact, or be closed to such use.*
- 2. All sites and construction methods for boat launching facilities will be fully assessed for environmental impact prior to construction.*
- 3. The need and practicability for associated facilities, such as access roads and parking, be fully assessed for environmental impact before the construction of any launching facility is approved.*

### 16.3 NAVIGATION MARKERS

It is important that the installation of onshore navigation markers be planned and located carefully to avoid conflict with Park values and those of the adjacent coast. A thorough evaluation of existing markers must be made prior to approving the installation of additional markers.

### *Prescription*

- 1. The installation of navigation markers in the Park be fully assessed before approval by CALM.*

## **17. RECREATION ACTIVITIES**

### **17.1 FISHING**

Recreational fishing is an important activity in the Park. Beach and rock fishing is provided for along 80% of the coastline. Sanctuary Zones extend for 20% of coastline, the majority of which is inaccessible and not fished from the shore. Fishing from boats in the Recreation and General Use Zones is available in 82% of the State waters in the Park. An aim of management is that fish stocks are maintained and species that are restricted in abundance or distribution will be protected. Recreational fishing will be confined to the Recreation and General Use zones.

Some fishing methods are considered to be environmentally damaging, or to cause such disturbance to fish communities that other Park users are disadvantaged. Spearfishing can cause fish to become extremely wary, which reduces the recreation experience of divers. Portion of the area zoned for Recreation will be excluded from spear fishing to enable an assessment of the full impact of this activity and to maintain areas of high use free from conflicting use.

Recreational fishing is controlled under the recreation fishing regulations of the Fisheries Act. Current bag limits which apply generally, also apply within the Park. In addition, there is a need to protect species such as coral trout that are restricted in abundance. As the research and fish stock monitoring studies proceed, it may become apparent that the current bag limits are too generous if the recreational fishery is to be maintained at present levels.

Recreation fishing in high use areas where there are a number of competing and conflicting uses will require restrictions to be applied to limit excess competition between different activities.

Certain species of edible fish are not readily caught other than by nets, in particular mullet. There is a place for trialing a limited use of nets of specific dimensions and conditions for use for mullet fishing to provide equity in recreational fishing. However, this needs to be restricted for use in specified areas in Recreation Zones.

Where the word "Park" is used in Prescriptions, this should be interpreted to apply to either Ningaloo Marine Park, or Ningaloo, Cape Range National Park and other reserves or land over which CALM has a management responsibility. Use of the word "Fish", is defined by the meaning of fish in the Fisheries Act.

### *Prescriptions*

- 1. Recreation fishing in the Park be regulated according to the fishing Regulations proclaimed under the Fisheries Act.*
- 2. Fish populations be inventoried and monitored.*
- 3. If any species of fish is shown to be in need of special protection, Legislation be proclaimed providing the necessary protection.*

4. *If there are indications that the present bag limits are inappropriate, new limits be proclaimed specifically for the Park.*
5. *Regulations be implemented which place limits on the manner in which fish may be processed, stored and transported in the Park.*
6. *Recreation fishing in the Park be confined to General Use and Recreation Zones and be prohibited in Sanctuary Zones.*
7. *Fishing methods be restricted to any methods provided for use in the Park under the Fisheries Act, but not including the use of pots, traps, set lines or nets (other than nets permitted specifically for mullet fishing on defined beaches). Only lines with baited hooks or lures, approved spears and specially approved nets may be used. Spearfishing using compressed air by SCUBA or Hookah be prohibited.*
8. *Fishing for mullet be restricted to nets specifically described for use in the Park and be restricted to specified sections of Recreation Zones on a trial basis. If the activity induces undue management conflict it will be phased out.*
9. *Recreation fishing using any form of spear approved under the Fisheries Act to be used in the Park be allowed within the Recreation and General Use Zones, except in the Recreation zones adjacent to the Cape Range National Park and the Defence land to the south between Tantabiddi Creek and Winderabandi Point. (National Park Regulations do not permit the carrying of a speargun in the Cape Range National Park).*
10. *The big game fishery for marlin and sailfish within the Park be managed under the Fisheries Department Regulations.*
11. *Charter boat operations providing services for recreational fishing be subject to licences issued by the Fisheries Department and to permits issued by CALM under standard concession arrangements (see Section 10.2).*
12. *Recreation fishing in the wedge of Recreation Zone in Osprey Bay be restricted to line fishing only from the shore south of the Point between Osprey Bay and Sandy Bay.*
13. *Recreation fishing in the wedge of Recreation Zone in Bills Bay be restricted to line fishing only from the shore south of the Coral Bay Settlement.*
14. *Recreation fishing in the wedge of Recreation Zone north of Point Cloates be restricted to line-fishing only from the shore.*

## 17.2 COLLECTING

Collection of live animals from the Park, particularly molluscs, is believed to have had a dramatic impact, detracting from the recreational and educational experiences which the Park offers. Although all species of molluscs occurring in the Park can be found outside the Park, many species are at the limit of their

geographical range in the Park. Some species are vulnerable to exploitation beyond their natural capacity to sustain viable populations and are in need of protection.

Octopus and clams (*Tridacna*) are collected for use as bait, particularly on intertidal reef flats at Bundegi and at North West Cape. This may need to be reviewed to ensure that reef flats do not become depleted.

#### ***Prescriptions***

- 1. The collection of any live animals (other than those approved for personal consumption and bait) not be allowed except by permit. Species which may be taken alive be listed by gazettal notice and be subject to size and possession limits according to the Wildlife Conservation Regulations and the recreation fishing Regulations set down for the Park.***
- 2. Collection of live marine fauna for research, study and reference purposes be allowed by permit only, specifying the species which may be taken, possession limits and other conditions.***
- 3. The collection of any dead material of marine origin be subject to limits on the type of material and possession limits.***
- 4. No collecting other than for approved research be allowed in Sanctuary Zones.***

#### **17.3 DIVING**

Swimming with a face mask and snorkel is an excellent means for many people to experience the beauty of corals, fishes and other animals. Many areas of the Park are ideally suited for this use.

SCUBA diving within the Park is expected to increase considerably during the period of this plan. Consideration needs to be given to the marking of underwater trails and the provision of information about what may be seen by divers.

#### ***Prescriptions***

- 1. Snorkel and SCUBA dive trails be established in suitable areas.***
- 2. Information be provided on marine natural history and where possible, guided tours be conducted by appropriately trained staff.***
- 3. Operators of commercial dive tours for Park visitors be required to hold a concession permit.***

#### **17.4 BOATING**

Access to and use of the waters of the Park is a limiting factor on the level of public use and a key factor in management. Boats ranging in size from small inflatables and dinghies to ships traverse the Park and accordingly, their requirements vary considerably.

It is expected that the use of both powered and sailing craft will increase dramatically. It is, therefore, important that management is able to respond to the varying needs of different small craft, cruising yachts and shipping. The capability to manage boating activities, including the provision of suitable boats and qualified staff, will need to be continually assessed.

### ***Prescriptions***

- 1. Adequate information be provided for boat users on safety requirements, conditions at sea and boating ethics for use as they pertain to the Park.***
- 2. Boating equipment and safety standards set by the Department of Marine and Harbours be enforced within the Park.***
- 3. Mooring with the use of anchors be allowed in any zone provided all reasonable care is taken to avoid environmental impact, conflict with other users, or to constitute a safety hazard.***
- 4. Areas be demarcated at those localities where larger vessels are usually moored, to ensure that moorings and vessels have minimal environmental impact and conflicts with other boating operations or recreational activities.***

### **17.5 SURFACE WATER SPORTS**

Where conflicts arise between surface water sports (including wind surfing, sailing, waterskiing, paddle boats and surfing) and other recreational activities in the Park, rationalisation will be required with certain uses taking precedence over others. Appropriate guidelines and controls are required to ameliorate potential conflicts.

Motorised craft used for recreation activities in their own right (including jet skis and waterskiing) will create conflict with other uses of the Park. Such activities need to be restricted to approved areas (if any) in consultation with the Department of Marine and Harbours.

### ***Prescriptions***

- 1. Where conflicts arise between surface water sports and uses or activities which are orientated towards appreciation of marine fauna, the latter activities shall have precedence.***
- 2. Use of motorised and non-motorised craft for recreational purposes other than in the direct pursuit of fishing be restricted to areas designated for such use.***
- 3. Organised sporting events will require prior approval and will be required to comply with conditions imposed.***

### **17.6 VEHICLE USE**

The use of vehicles along beaches requires review to avoid environmental impact in dunes and to minimise social conflict. Types of vehicles allowed as a means of assisting access (but not as a recreation activity in itself) and beaches to be approved for use requires careful assessment in the context of a recreation development plan for the coast.

### ***Prescriptions***

- 1. Vehicle access to, and use of, beaches be reviewed in the context of a recreation development plan.***
- 2. Vehicle use be restricted to designated vehicle types on defined routes of access to beaches approved for vehicle use.***

## 18. COMMERCIAL ACTIVITIES

### 18.1 FISHING

Commercial fishing in the Park will be regulated and managed by the Fisheries Department in consultation with CALM. It will be confined to the area zoned for General Use so that competition between recreational and commercial operations will be minimised. The only exception to this will be the few commercial fishing licences, some of which have operated for many years, in areas declared as Recreation Zones. These licences will not be transferable and no new licences will be issued. Commercial fishing will therefore be phased out in the Recreation Zones and prohibited in Sanctuary Zones.

Commercial fishing methods will be confined to those which are not environmentally damaging. Any species shown to be at risk of being over-fished may be given special protection either throughout the Park or in any part thereof.

#### 18.1.1 Wet-line Fishing

Commercial fishing for reef fish and pelagic species occurs within the Park (eg. mackerel). There is a perceived competition between recreational fishing and commercial fishing in the Park, particularly in Recreation Zones. Subject to monitoring and maintenance of sustained yield in the General Use Zone, some or all wet-lining licences may need to be phased out by the Fisheries Department in consultation with licence holders. Commercial fishing in Recreation Zones will be phased out at the earliest opportunity and will not be permitted in Sanctuary zones.

#### *Prescriptions*

- 1. The level of commercial exploitation in the General Use Zone of the Park be subject to monitoring and control to ensure the maintenance of fish stocks.*
- 2. Subject to monitoring and maintenance of sustained yield of fish stocks in the General Use Zone, some or all wet-lining licences may be phased out over a period determined by the Fisheries Department in consultation with licence holders.*
- 3. Licences in Recreation Zones be phased out at the earliest opportunity over a period determined by the Fisheries Department in consultation with licence holders.*
- 4. Fishing be prohibited in Sanctuary Zones.*

#### 18.1.2 Trawling

Prawn trawling in Exmouth Gulf is an important industry. The commercial tourist potential of Bundegi Reef is high and the intrinsic values of the Reef need protection from undue disturbance.

A research and monitoring program needs to be established to assess the relative economic values of trawling, other commercial and recreational use in the Park. The degree to which any of these uses may impinge on the Park environment or on each other, is also in need of assessment.

### ***Prescription***

***1. Commercial trawling in the Park be restricted to areas zoned for General Use.***

#### **18.1.3 Pelagic Trawling and Purse Seining**

The potential for a mid-water trawl and purse seine fishery has not been fully determined. This should be monitored and if appropriate, developed in a rational manner.

### ***Prescription***

***1. Commercial trials for a pelagic fishery in the General use zone be monitored. If establishment of a new fishery is feasible, potential environmental impact on Park values must be considered prior to granting licences endorsed with appropriate conditions.***

#### **18.1.4 Netting**

Competition occurs for whiting, a species important for recreation fishing. It is considered that beach seine fishing is inappropriate in Recreation and Sanctuary Zones.

### ***Prescriptions***

***1. Beach seine fishing be phased out in Recreation Zones at the earliest available opportunity in consultation with licence holders and be prohibited in Sanctuary Zones.***

***2. Set-netting be prohibited.***

#### **18.1.5 Trapping**

With the gradual development of the charter fishing industry and recreational fishing in general, competition may increase for target species which are important for trap fishing.

### ***Prescription***

***1. The use of fish traps will be limited and may be phased out over a period determined by the Fisheries Department in consultation with licence holders.***

#### **18.1.6 Aquarium Trade**

Commercial collecting of small adult and juvenile reef fish for aquaria is an activity likely to be in direct conflict with recreational and educational uses of the Park. It is also incompatible with the zoning of the lagoon and reef habitats.

### ***Prescription***

***1. Commercial harvesting of fishes for the aquarium trade not be allowed in the Park and existing licences be revoked at the earliest opportunity.***

#### **18.1.7 Rock Lobster**

Rock lobster potting in coral reef habitats of the Park may be environmentally damaging. The taking of rock lobster by hand whilst diving on compressed air is restricted to one licence. The licence is not renewable and when it is surrendered there will be no further commercial activity of this kind in the Park.

### ***Prescriptions***

- 1. Allow the existing licence for taking rock lobster by hand to continue until fishing ceases.***
- 2. Prohibit the use of rock lobster pots in the Park.***

## **18.2 FISHING CHARTER**

The potential for an increase in charter fishing boat operations in the Park is high. Regulation of the fledgling industry in the Park is required to:

- protect the resources of the Park, which are the basis of the industry, from over fishing; and
- ensure that high standards are maintained and that Park visitors have a quality experience.

It is important that charter operations develop a common code of ethics and standards of service. Most if not all charter boats operating in the Park are also licenced to operate as commercial fishing boats. It is important that, when charter fishing occurs ie. when a boat is chartered for recreation fishing by amateurs, that all fish caught are in accordance with regulations set down for the Park and any fish caught are not subsequently sold for commercial gain.

It is essential that full consultative processes take place between the charter industry, the Fisheries Department and CALM, to determine appropriate guidelines for development and management of the charter fishing industry. Clear guidelines are required to distinguish between management of fishing by the Fisheries Department and management of commercial charter and concession operations by CALM in the Park.

### ***Prescriptions***

- 1. All fishing charter vessels operate in accordance with the requirements of the Fisheries Department for recreation fishing operations, Marine and Harbours boating standards and CALM policy on concessions.***
- 2. Charter fishing be restricted to the General Use and Recreation Zones***

## **18.3 CONCESSIONS**

Department policies on concession letting and operations will need to be implemented consistently and impartially. There will be a requirement to clearly define criteria to be met to obtain a concession, and areas and conditions of operation.

### ***Prescriptions***

- 1. Glass-bottom boat, reef viewing tours, charter fishing vessels, dive tours and any other services provided by private commercial operators within the Park be subject to permits issued by CALM under standard concession arrangements (see Sections 10.2, 17.1).***
- 2. Onshore leases for the purposes of operating equipment hire or other services to Park visitors be subject to permits issued by CALM under standard concession arrangements.***
- 3. Conditions of concession permits issued by CALM be designed to ensure environmental protection***



*and high education and service standards.*

*4. Concession operations in Sanctuary Zones be allowed by special permit only.*

#### 18.4 PETROLEUM EXPLORATION

The Government policy on this matter is currently under review.

##### *Prescriptions*

*1. Liaison be maintained between the petroleum industry, the Department of Mines, the Environmental Protection Authority and CALM to ensure that adequate conditions are set and followed to minimize detrimental environmental effects of any approved petroleum exploration in the Park.*

*2. Petroleum exploration be in accordance with Government policy.*

#### 18.5 AIRCRAFT

Both military and civil pilots need to be aware of the impact that low flying over the Park has on recreation experiences sought by visitors. Liaison with the Civil Aviation Authority and the Royal Australian Air Force is required to establish appropriate guidelines for operations of aircraft over the coastal portion of the Park. The objective should be to ameliorate conflict with Park use whilst recognising the operational objectives of the Air Force and civil aviation operational requirements.

##### *Prescription*

*1. Liaison be established with the Civil Aviation Authority and the Royal Australian Air Force to avoid, wherever possible, disturbance of Park users.*

#### 18.6 MARINE POLLUTION

Appropriate guidelines need to be provided and regulations implemented where appropriate in order to minimise pollution of marine waters by fuel or chemicals. The discharge of wastes into the Park from adjacent land or waters, the transport through the Park or use of any toxic or hazardous chemical in the Park and the use of chemicals for de-fouling marine organisms, require appropriate regulation.

##### *Prescriptions*

*1. Regulations and procedures be established for re-fuelling and cleaning of boats in the Park.*

*2. A contingency plan for spills and transport of fuels and hazardous or toxic chemicals be formulated for the Park.*

#### 18.7 MARKETING AND PROMOTION

Historically, the provision of adequate management has lagged behind the marketing and promotion of parks. It is imperative that this anomaly be recognised and the marketing and promotion of the Park by CALM and other agencies be co-ordinated with management resources and facilities in the Park.

##### *Prescription*

*1. Marketing and promotion of the Park be at a level commensurate with the level of Park management resources and the facilities provided for visitor use.*

## 19. LAND MANAGEMENT

### 19.1 MARINE PARK

The 40 metre wide reserve for the purpose of Marine Park between the pastoral leases and HWM is subject to increasing pressure from recreational use. It is imperative that only suitable areas of the reserve are used for camping and access to the shore. Vehicle use should be strictly controlled. Careful site planning with modifications, such as site hardening, will be necessary in some areas in order to sustain long term recreational use. Special care is needed in management of the coastal zone to avoid erosion of dunes. Many access tracks in this zone, particularly to some beaches and in dunes, serve no useful purpose and need to be closed.

The integration of recreation management on pastoral land with management of the Park is essential.

#### *Prescriptions*

- 1. Management of the Park be integrated with management of the adjacent pastoral land under Section 16 agreements (see Section 19.2).*
- 2. Where use of the coast cannot be sustained without incurring unacceptable levels of degradation of natural resources, public access should be restricted.*
- 3. A concept plan for recreation development be formulated for the reserve (see 19.3).*

### 19.2 PASTORAL LAND MANAGEMENT

Approximately half of the coast adjacent to the Park is Crown land leased for pastoral use. Recreational use of this area of coast is increasing rapidly. This is placing progressively greater demands on the limited resources of the pastoral station lessees, who are not equipped to manage recreational use.

Degradation of the coast is increasing as tracks are made to less suitable areas for camping and fishing. Planning and management of the coastal portions of pastoral leases is essential if environmental, social and economic values of the coastal region are to be retained.

#### 19.2.1 Management Agreements with Pastoral Lessees

An arrangement for management of coastal portions of Ningaloo, Cardabia and Warroora Stations has been agreed to in principle by the lessees of each Station and the Department of Land Administration.

The principle of the agreement is for CALM to manage access and recreational use of the coast adjacent to the Park, while the pastoralists retain responsibility for managing pastoral activities on the land.

#### *Prescriptions*

- 1. Management of public recreational activities on pastoral leases adjacent to the Park be integrated with management of the coastal Marine Park reserve and the marine component of the Park, through agreements with pastoral lessees under the powers of Section 16 of the CALM Act.*
- 2. Pastoral lessees, and where relevant, Local Government Authorities, participate in preparation of management programs which form the basis of agreements, and maintain involvement in management*

*through a formal liaison process.*

### 19.2.2 Camping

A variety of sites that can sustain long-term camping use have been identified in Cape Range National Park and are being progressively up-graded as resources permit. A review of camping and other recreational pursuits in the coastal reserves north of Cape Range National Park has been carried out in the management planning process for those areas (see 5.2.7). Serviced sites are provided north of Yardie Creek in Cape Range National Park. Those who seek more sophisticated camping and other accommodation choose their needs in Exmouth or Coral Bay. The management philosophy for camping is to retain, for as long as possible, low-key, isolated and non-publicised camping south of Yardie Creek and a range of serviced sites in Cape Range National Park north of Yardie Creek.

A survey of the coastal lands between the northern boundary of Ningaloo Station and the southern boundary of Warroora Station has indicated that there are few sites suitably located and capable of sustaining camping or day use. Most of the coast consists of high and unstable dune systems abutting steep or rocky shores that have little or no recreation potential. Many tracks that have been forged into such areas are, or with increasing use have the potential to become, seriously degraded. Areas which cannot sustain moderate or increasing levels of use need to be maintained free of vehicle activity.

Accordingly, sites have been identified along the coast which have the long term capability of sustaining use. Three major areas have been identified which meet the criteria; Lefroy Bay, Bruboodjoo Point and the "14 Mile". Each of these is already subject to current, unmanaged camping and suffer erosion and other despoilation. Each has potential boat launching sites, relatively sheltered sites for mooring small boats and access to recreation opportunities. Lefroy Bay has attractive underwater scenery and potential for the development of dive trails.

#### *Prescriptions*

*1. Low key camping areas and day-use facilities be developed at Lefroy Bay (Ningaloo Station), Bruboodjoo Point (Cardabia Station) and the "14 Mile" (Warroora Station). Each area may be provided with boat launching facilities, information, campsites, beach access, toilets and rubbish collection services as resources permit. Water may be provided if it is available at reasonable cost. These facilities will be subject to management agreements with the pastoral lessees.*

*2. Unserviced and isolated sites for day and overnight use be retained wherever the land has the capacity to sustain use providing sites and any facilities provided are serviced by users.*

*3. A concept plan for recreation development be prepared for, and endorsed, by the NPNCA .*

### 19.2.3 Road Access

As use of existing tracks to and along the coast increases, the need will arise for relocation and construction of access roads capable of carrying conventional vehicles. The existing station tracks are inadequate in most instances for long-term use as they were never designed or located for continuous use. In the short term, appropriate routes for vehicle access require careful location and minimal definition to retain the relative isolation of many recreation sites, without forming or other earthworks. As use increases the tracks will require progressive forming and surfacing.

Some existing station tracks need to be closed to the public in order to limit public access to sensitive areas of the pastoral leases and to prevent further environmental damage to fragile coastal dune areas.

#### ***Prescriptions***

*1. The existing system of tracks through coastal areas of the stations be reviewed in consultation with leasees. Those that are not required for station use or access to the coast in accordance with a recreation development plan will be closed to public use and rehabilitated.*

*2. A concept plan for recreation development be prepared for, and endorsed by, the NPNCA .*

*3. The above recommendations be implemented in accordance with the proposed section 16 agreements following liaison with the pastoral lessees, the Department of Land Administration and the Local Authority.*

#### **19.3 MAUDS LANDING/CORAL BAY**

In order to resolve the current conflicts of use in this area an overall planning strategy is needed. A draft Town Planning Scheme prepared for the small Townsite area at Coral Bay does not fully address the broader issues which impact on the townsite and Interim Development Orders do not consider the impact of any development proposal on the Park. Although the draft management proposals for the Ningaloo Marine Park in 1983 recommended cancellation of the Townsite at Mauds Landing and its incorporation into the Park, this action was deferred until an adequate area study was conducted. A marina proposal for Mauds Landing is undergoing feasibility studies (see 16.1).

#### ***Prescriptions***

*1. Cancellation of the Townsite at Mauds Landing and its incorporation into the Park be deferred pending further study on the most appropriate use and administration for this land.*

*2. A study be made of coastal land within a ten kilometre radius of Coral Bay with the objective of identifying land which is suitable for the development of commercial and public facilities.*

#### **19.4 FORESHORE RESERVE 37500**

The foreshore reserve provides limited capacity for resolution of the problems occurring on the beach. Parking of vehicles and boat trailers on the beach is undesirable as the priority for use is swimming, other water activities and beach use. The foreshore reserve is the only public land presently available where vehicles can be parked and where public toilets can be placed. However, the land is not suitable for the siting of these facilities. The resolution of these problems lies in rationalising land use in Coral Bay.

#### ***Prescriptions***

*1. A concept plan for rationalising use and provision of public facilities together with management of beach and water activities be prepared and approved prior to implementation.*

*2. The purpose of the reserve be amended to "Marine Park", for consistency with the rest of the coastline reserve.*

## 19.5 SPECIAL LEASES

The Special lease on the southern boundary of Warroora Station is renewable annually by the Department of Land Administration. Rock lobster processing operations conducted there under a commercial fishing licence do not impinge greatly on the Park, although the occasional Park visitors who might find their way down there may find the operation out of keeping with the Park's purpose. Neither the licence nor lease are transferable. When the licensee no longer wishes to continue commercial fishing, the licence and lease will be cancelled.

The Special lease just north of Cape Range National Park expired in March 1989. The lease area became part of the coastal reserve and will be addressed in the management plan for that area.

### *Prescription*

*1. Special Lease 3116/7004: Maintain the existing rights and privileges of the lessee within Warroora Station until commercial fishing ceases.*

## 19.6 COASTAL RECREATION RESERVES

The two areas of vacant Crown land west of Yardie Road and east of Murat Road adjacent to the Park (Fig. 5) are reserved and jointly vested in, and managed by, CALM and the Exmouth Shire Council. These reserves will be subject to a separate management plan. The separate identity of these reserves will ensure that local Exmouth interests in recreational use of the coast is retained.

### *Prescription*

*1. Management of the coastal recreation reserve be integrated with Park management whilst ensuring that recreational interests of Exmouth residents are provided for.*

## 19.7 CAPE RANGE NATIONAL PARK

A management plan for this Park was approved by the Minister of Conservation and Land Management on 1 December 1987. The plan has been formulated to take account of integrated management with Ningaloo Marine Park. The Milyering Bicentennial Visitor Centre is a focal point for visitors to both parks.

### *Prescription*

*1. Ensure that management practices of Ningaloo Marine Park and Cape Range National Park are fully integrated.*

## 19.8 DEFENCE LAND

The two areas of Defence land adjacent to the Park (Locations 44 and 97) require management. Management of the coastal section of Location 97 between Cape Range National Park and Ningaloo Pastoral Station is crucial for effective management of the Park. This area is rapidly becoming degraded through uncontrolled camping on the coast. Campers and day-users in this area pose special management difficulties when the adjacent bombing range is in use.

Management of coastal areas of Location 44 at the head of the Cape is important to enable management of the adjacent portions of the Park. In addition to ensuring management of all of all coastal areas adjacent

to the Park, management of Location 97 would also provide advantages to the Defence Department by lessening the impact of uncontrolled recreational use of the coast. Management and development of any facilities is dependent on the establishment of a management agreement with the Department of Defence.

#### *Prescription*

*1. Establish a management agreement under Section 16 of the CALM Act with the Department of Defence for management of the coastal sections of Lyndon Locations 44 and 97.*

## 20. EDUCATION

Meeting the expectations of Park visitors will be a major challenge. Education and interpretation programs will be important and will require trained staff, both in the Milyering Bicentennial Visitor Centre and in the field. An information facility is also required at Coral Bay, where there is a high demand for educational material and guided interpretation of the Reef.

#### *Prescriptions*

*1. The Visitor Centre be the focal point for the dissemination of information and the provision of education and interpretation programs.*

*2. An information facility be provided at or in the vicinity of Coral Bay if resources are available.*

*3. CALM officers design and conduct nature swims and nature walks as resources permit.*

*4. Concessions be let for the operation of glass bottom reef viewing tours and dive tours, subject to the operators maintaining adequate standards with respect to information and services provided, and subject also to adequate environmental protection conditions.*

*5. Independently or in collaboration with concession operators, CALM staff arrange special event natural history tours (eg. observation of turtle nesting, coral spawning, whale migration).*

*6. CALM staff promote educational tours to school groups and other groups.*

*7. CALM provide printed and audio-visual interpretive material for public use, dealing with aspects of the marine and coastal natural history of the Park and where possible, guided tours be conducted by appropriately trained staff.*

*8. Adequate information be provided for all boat users on safety requirements, conditions at sea and boating ethics.*

## 21. RESEARCH

The implementation of research and monitoring programs is pivotal for improvement of understanding the oceanographic and biological processes occurring in the Park. The impacts that recreational and commercial uses have on natural resources and on each other, and their potential for expansion without

conflict are fundamental issues in management of the Park and economic development of the region. Research will not be ad hoc; programs will be designed to fill gaps in knowledge and be well instituted.

Priority will be given to management orientated research and monitoring programs. Research which involves unwarranted manipulation or destruction of natural resources will not be supported.

### ***Prescriptions***

*1. Research into the basic ecology and oceanographic processes of the Reef be continued with all research programs to be sanctioned only by permit or other approved mechanism (such as interagency agreements).*

*2. Monitoring of marine flora and fauna be carried out to gain an understanding of factors which influence the stability of marine communities in the Park.*

*3. Primary responsibility for research and advice on exploited fish stocks be with the Fisheries Department.*

*4. Monitoring and periodic surveys of recreational and commercial use in and adjacent to the Park be carried out to determine the effect of human use on marine communities in the Park.*

*5. A research and monitoring program be conducted to determine the relative economic values of recreational and commercial uses of the Park and the environmental and social impacts arising from either use.*

*6. A study be initiated by CALM into determining the potential socio-economic benefits and costs arising from the establishment and management of the Park.*

## **22. MANAGEMENT ADMINISTRATION**

### **22.1 INTERAGENCY AGREEMENTS**

A Memorandum of Understanding is required between the Fisheries Department and CALM. This will set down the guidelines and procedures for management of the fishing related activities in the Park which will be administered under regulations prescribed under the Fisheries Act.

A Memorandum of Understanding is also required between CALM and other agencies, including the Western Australian Museum for management of wrecks and other sites of cultural importance and the Department of Marine and Harbours and CALM for management of boating and other regulations.

### ***Prescription***

*1. Implement management agreements with relevant government agencies to ensure efficiency of management operations and regulations.*

### **22.2 CONSULTATIVE COMMITTEE**

The Ningaloo Marine Park Advisory Committee was established to provide a communication mechanism with the local community and assistance in formulating the management plan for the Park.

Due to the number of other agencies that have an interest in the Park, in particular the Fisheries Department and the Department of Marine and Harbours, the establishment of a Consultative Committee would be advantageous. A consultative committee should be convened by CALM and include representation from both Local and State Government agencies with a direct interest in management of the Park.

### ***Prescription***

- 1. A consultative committee be convened to aid in management of the Park.***

## **22.3 SEARCH AND RESCUE**

A number of boating accidents have occurred in the Park, some resulting in fatalities. Most accidents appear to have been due to a combination of factors. These include inadequate knowledge of local conditions, inappropriate boats for the prevailing seas and overloading of boats. Inexperience or incompetence are often significant contributing factors in accidents.

The conditions on the Reef can vary considerably and deteriorate in a very short time. Wave data generated during CALM's research program show that waves in the order of 4.6 metres in height with a period of 11 seconds can suddenly occur when the mean height of swells is around 2 metres. Such "freak" waves occur frequently. Passages in the Reef are particularly prone to closing out on an ebb tide when the sea breeze is blowing. Whilst the conditions may appear safe when boats venture out, they can rapidly change to a situation where return via the same passage may have become a solid line of breaking waves and is dangerous or impossible to enter.

### ***Prescriptions***

- 1. A Search and Rescue Plan be developed for the Park in conjunction with the Police Department, the State Emergency Service and the Exmouth Sea Search and Rescue Group. Emergencies be coordinated by the Police Department.***
- 2. Information and guidance on all aspects of safety at sea in the Park be provided to Park users.***

## **22.4 SURVEILLANCE AND ENFORCEMENT**

Surveillance is important because it provides information on patterns of use which affect allocation of resources, detects breaches of regulations and aids in detection and prevention of accidents.

Surveillance and enforcement are particularly important in the initial years of management as they afford an opportunity to familiarise users with the rules and in some cases, to convince people that their previous activities are no longer appropriate. Surveillance and enforcement also supports the behaviour of those Park users who abide by rules by protecting their right to equitable use of resources.

Users of the Park will generally both respect and support the management effort towards enforcement thereby enabling a code of ethics to evolve in which the community of users will be the effective managers of the Park. This will enable staff to concentrate more fully on their primary role of assisting and guiding users and will lessen overall costs of Park management.



### *Prescriptions*

- 1. Regulations applying on water and land in the Park be enforced.*
- 2. Primary responsibility for surveillance and the enforcement of legislation relating to fish stocks be with the Fisheries Department.*

## **23. POTENTIAL IMPACTS OF PARK MANAGEMENT**

### **23.1 SOCIO-ECONOMIC**

Ningaloo Marine Park and Cape Range National Park, will together, become a major tourist destination in Australia. Adequate management is needed to protect the intrinsic values of the Parks and to retain the values which attract people to the area.

Tourism directly and indirectly associated with the Park will grow as the two parks become recognised nationally and internationally. This will have wide ranging impacts for the Region and the State and particularly for Exmouth. Many visitors will seek relatively sophisticated facilities in Exmouth. However, there will always be many who wish to seek the remoteness which may be experienced in many parts of the Park.

Local and State instrumentalities will need to recognise the inevitability of change in patterns and intensity of public activity in the region, brought about principally by the establishment of and public recognition of Cape Range National Park and the Ningaloo Marine Park.

### **23.2 PATTERNS OF USE**

As levels of use continue to rise in the Park, conflicts will inevitably arise through competition for use of preferred areas. Demand for certain uses may increase at a greater rate than others and recreational uses new to the Park will initiate further change. The only factor that has a degree of certainty is that change is likely to be rapid.

There is, however, a finite capacity for use of any particular area of the Park beyond which the environmental stability will decline and the social conflict will increase. When this occurs, one type or level of use may have to take precedence. Modification of a site will sometimes lessen environmental impacts and sustain higher levels of use which are more socially acceptable. However, preferred beaches will inevitably become crowded, competition will increase at preferred fishing areas, campsites will reach capacity and parking areas will become full.

It is possible that glass bottom boats, snorkeling and diving will increase dramatically in certain areas, particularly if facilities or incentives are provided to encourage these activities.

Management of the Park will need, therefore, to be a step ahead of recreation demand. It will, however, be difficult to anticipate change of patterns and levels of use. Moreover, the levels of use that any site or area can sustain need to be determined early and appropriate planning and management strategies implemented as the Park develops. The environmental and social impacts of recreational use will therefore require on-going assessment.

### 23.3 EQUITY OF USE

Equity of use can be expressed as either the social value of a recreation experience, or the economic value of an activity to any Park user. As levels of use increase in the Park and adjacent areas, the equity of use is likely to change. Both management and the community therefore need to be aware that changes will occur and some "traditional" uses may change.

Equity of use may change where a commercial fisherman has fished an area in the past and changing patterns of use may foreclose further use for commercial fishing. A lack of environmental suitability of sites used for camping or increases in patterns of day use may close a site previously used for camping. Exmouth residents may eventually lose "exclusive" use of the Park during summer months with increasing visitation and this may cause annoyance for some residents.

Recognition that equity will change needs to be made in the management of the Park as this will have significant implications on the planning for, and provision of, appropriate facilities for Park visitors.

### 23.4 IMPACT ON ADJACENT AREAS

Management of the Park cannot be complete without consideration of the effect the Park may have on adjacent areas, as management of any area ultimately has an effect on adjacent areas.

Management of adjacent areas with similar objectives or which are managed by the same agency (eg. Ningaloo Marine Park and Cape Range National Park) will have little conflict with each other as management is co-ordinated. Those areas that have little similarity (such as the Coral Bay townsite village) will have the greatest potential for divergent and sometimes conflicting objectives. Every effort therefore needs to be made to avoid potential conflicts before they arise so as to lessen their impacts on the Park or adjacent areas.

Management integration of the coastal sections of the Commonwealth Defence land will be important if further environmental degradation is to be avoided and recreational use of the Park and adjacent coast co-ordinated. Discussions should therefore be initiated at an early stage between the relevant agencies (See 19.8).

The greatest long term impact of the Park on regional land use will occur on the three pastoral stations adjacent to the Park, where changes in land use are inevitable given increased public use of the coast. It is desirable that this issue be raised in the context of this management plan as it is the establishment and management of the Ningaloo Marine Park which will have a profound influence on the future use and development of the region.

The effect of applying regulations and management over the water encompassed by the Park will induce greater pressure on adjacent waters and coral reefs, particularly the area around the Muiron Islands adjacent to the Park.

## 24. REVIEW PROCESS

This plan will be current for up to ten years from the date of adoption but may be revised (following statutory requirements for public review) at any prior time if necessary.

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