Marmion Marine Park

Draft Management Plan

July 1990

Department of Conservation
and Land Management

MARMION MARINE PARK

DRAFT MANAGEMENT PLAN

Project Team:

- Dr Barry Wilson, Director of Nature Conservation, CALM
- Greg Pobar, Marine/Island Reserves Manager Metro Region, CALM
- Marmion Marine Park Consultative Committee represented by:
  Fisheries Department
  Department of Marine and Harbours
  Ministry of Sport and Recreation
  Department of Planning and Urban Development
  Stirling City Council
  Wanneroo City Council

Department of Conservation and Land Management

COMO W.A. 6152

TABLE OF CONTENTS

FIGURES

TABLES

APPENDIX I

APPENDIX 2

APPENDIX 3

ACKNOWLEDGEMENTS

This draft plan was prepared for the National Parks and Nature Conservation Authority by CALM based on an earlier draft published by the Department of Conservation and Environment (DCE, 1985).

Valuable suggestions for amending the original draft plan were made through public submissions and by the Marmion Marine Park Consultative Committee. These contributions are gratefully acknowledged, with thanks to Stephanie Powell and Debbie Bowra for assistance in editing and typing the numerous drafts.

SECTION 1. INTRODUCTION

1. INTRODUCTION

The Marmion Reefs have long been recognised as having high conservation and recreation values. The outer reef protects lagoons to the north and south of Mullaloo Point which in turn allows for recreational use of resources. Habitats in the area include intertidal reef platforms, coastal sand beaches, a high limestone reef about 1 km from the coast, and the Centaur Reef/Three Mile Reef system (Marmion Reefs) about 4 km from the coast. Of note are complex assemblages of sea floor communities including seagrass meadows, algal limestone pavement communities, and crevice animal associations. Little Island, shipwrecks, an OTC cable, a sewage outfall pipe and 2 boat harbours are within the area.

The area lies adjacent to a densely populated portion of the Perth metropolitan area and is extensively used for public recreation, particularly swimming, diving, sailing and fishing. There are also significant commercial fisheries. Rock-lobster potting and abalone harvesting are of particular note.

Recognising the complexity of these conservation, recreation and commercial values of the area, the Marine Park was declared in 1987 to ensure adequate management.

Two types of recreation exist in the area, namely consumptive recreational activities and non-consumptive activities. It has been recognised that consumptive activities (eg. fishing) will need to be regulated to maintain resources on a sustainable basis, whereas non-consumptive recreation can be enjoyed and promoted with minimal loss of resources.

The Marmion Marine Park encompasses State waters vested in the National Parks and Nature Conservation Authority. This document deals with waters vested as the Marmion Marine Park and includes small islands and intertidal reef systems. The need to consider neighbouring coastal developments is also addressed.

1.1 PRINCIPLES OF MANAGEMENT

The principal aim of management of the Park is to provide for conservation of the marine environment while allowing sustainable recreational and commercial use to the extent that it is compatible with conservation of its natural environment.

Fishing is to be controlled to a level where fish and other animal or plant populations are not adversely affected for the long term. To avoid conflict between fishing and Park

users who wish to enjoy marine environments free from exploitation, an objective of management is to provide areas free from fishing. Another management goal is to promote an appreciation and understanding of the marine environment by providing information, guidance and interpretation programs.

The principal dilemma of management is where to strike a balance between using and exploiting the natural resources of the Park, and conserving the values which make the Park attractive. 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 management, including the provision of services and facilities, within the reality of limited resources.

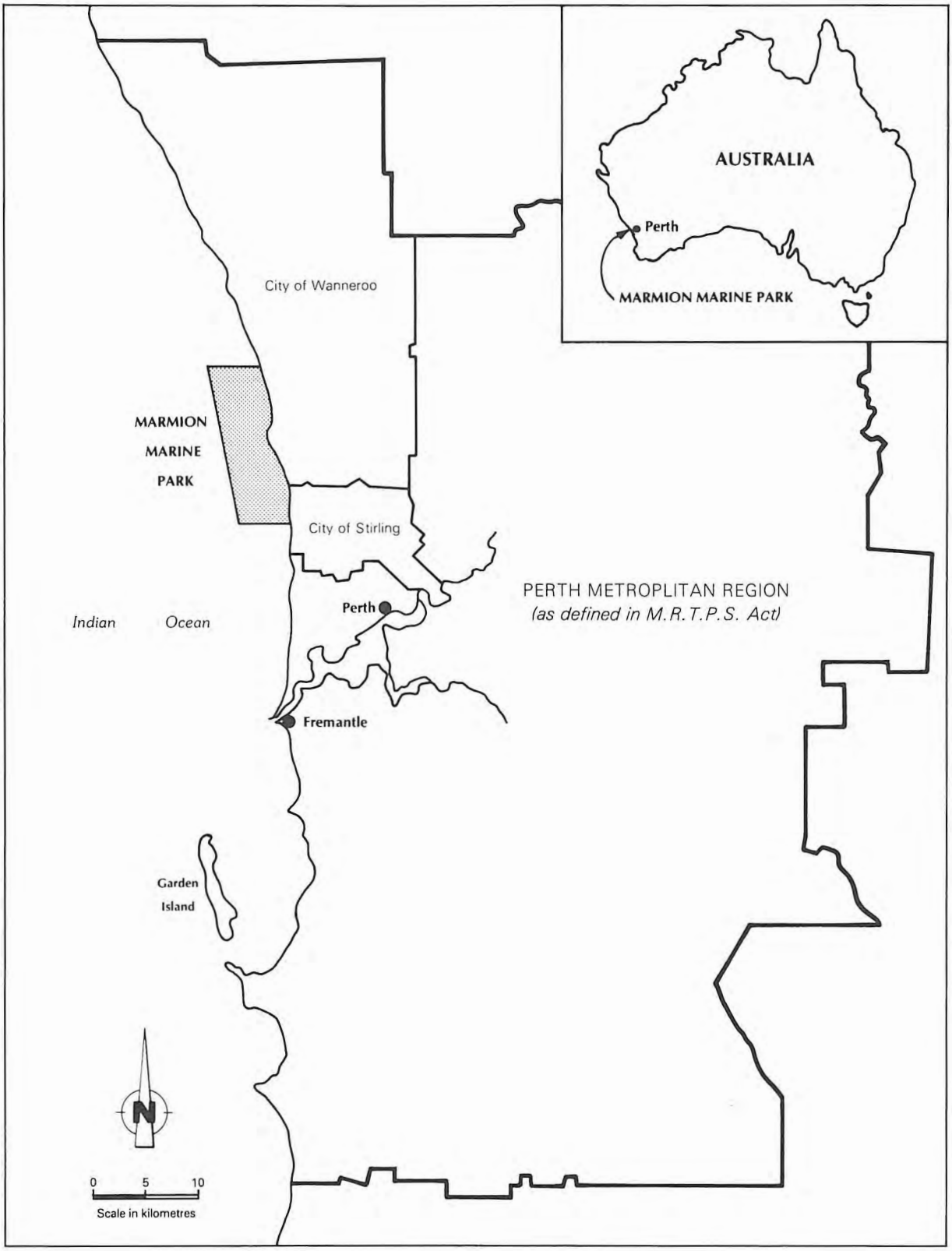

Figure 1. Location of the Marmion Marine Park

SECTION 2. HISTORY OF THE MARINE PARK

The quality and diversity of the flora, fauna and habitats of the Marmion reef and lagoon ecosystems were first noted by the Australian Marine Science Association in the 1960s. The Association, which recommended that the area be reserved, also recognised the area's accessibility and recreation potential.

The System 6 Study Report (DCE, 1981) contained the following recommendations for the metropolitan location M10 (offshore reefs - Ocean Reef to Trigg):

1. The Environmental Protection Authority (EPA) should commission a study of the Sorrento- Mullaloo reefs with the aim of recommending the establishment of an Aquatic Reserve.

2. Marine life should be conserved through revision of regulations to prevent any fishing, except by line.

The EPA reviewed those recommendations and, in late 1983 (EPA, 1983), made the following recommendations:

M10.1 That our general recommendations on planning and management of Regional Parks be applied to this area.

M10.2 That a study of the Park area be commissioned by the Environmental Protection Authority with the aim of establishing a marine reserve to be managed for the purposes of scientific research, education, conservation and recreation.

M10.3 That, subject to the implementation of M10.2, a management plan be prepared for the reserve.

In February 1985 the DCE, in response to a Government directive, carried out a study to comply with these EPA recommendations. The M10 team was given the following terms of reference:

(i) to characterise and describe the marine environments and marine communities of the area, and produce a report on the findings of the study;
(ii) to identify and evaluate present and future impacts on the proposed M10 marine reserve; and
(iii) after consideration of (i) and (ii) and in consultation with representatives of the user-groups with interests in the proposed M10 marine reserve area, to frame a

management plan for the proposed reserve, with respect to scientific research, education, conservation and recreation.

A draft management plan for the proposed M10 Marine Park (DCE, 1985) was produced in consultation through correspondence and workshops with representatives from over 65 organisations and user groups. The draft plan took into consideration the 11 June 1985 announcement by the State Government that the Hillarys Boat Harbour construction would proceed. It also took into consideration the proceedings of a seminar on the proposed M10 Marine Park held on 12 June 1985 (DCE, 1986). The draft plan was released in October for a period of two months for public review. On 10 December 1985, the Hon Premier announced the intention to declare the Marmion Marine Park. The Government agreed to allocate appropriate resources to CALM and the Fisheries Department to enable declaration and management of the Marine Park.

The Government also authorised CALM to enter into agreements under the authority of Section 16 of the CALM Act, with the two local authorities involved in order to formalize a management regime for the coastal lands adjacent to the Marine Park.

The Marmion Marine Park Consultative Committee, convened by CALM, was formed to address the recommendations of the draft plan. It was agreed that rather than enter into agreements between CALM and the local authorities for inclusion of their lands as part of the "greater marine park", coastal management issues would be addressed by the Committee as they occurred.

The Marmion Marine Park was reserved on 13 May 1987. It was named the Marmion Marine Park, Marine Reserve Number 1 on 25 September 1987.

2.1 BOUNDARIES

The System 6 Report (EPA, 1983) depicted the boundary of the proposed Marine Park between Trigg Island and Ocean Reef launching facility, enclosing Three Mile Reef and Centaur Reef. Trigg Island is an easily discernable reference point and became a convenient location for the southern boundary of the Park.

The northern boundary proposed by the EPA did not relate closely to any discernable physical feature. Also, there were onshore reefs, sandy beaches and sea grass meadows of significance north of Ocean Reef. Consequently, when the Park was declared the northern boundary was located at a convenient point just north of Burns Rocks, thus extending the Park several kilometres further north.

The seaward boundary of the Marine Park is a straight line within the limit of the State territorial waters. The inshore limit is the high water mark.

The Marmion Marine Park, as defined, is declared on Land Administration Miscellaneous Plan Number 1597 (Figure 2). By definition, the Park:

(a) is all that portion of land, waters and sea bed bounded by lines starting from the intersection of high water mark south of Trigg Island with the easterly prolongation of the northern boundary of Lot 1, Swan Location 611, (including all surrounding reef at Trigg Island) then extending westwards on a true bearing of 270° to a point in Latitude 31°52'38"S, Longitude 115°41'41"E to a point generally northwest of Latitude 31°43'27"S and Longitude 115°39'17"E then east on a true bearing of 90° to the intersection with high water mark on the sea coast (north of Burns Rocks) then southerly along high water mark on the sea coast;
(b) includes Little Island (Reserve Number 10854) and Burns Rocks (Reserve Number 10855);
(c) excludes the Hillarys Boat Harbour and Ocean Reef Boat Harbour (Plan Number 16093) at their outer boundaries;
(d) includes the waters, islands, sea bed, subsoil beneath and airspace above.

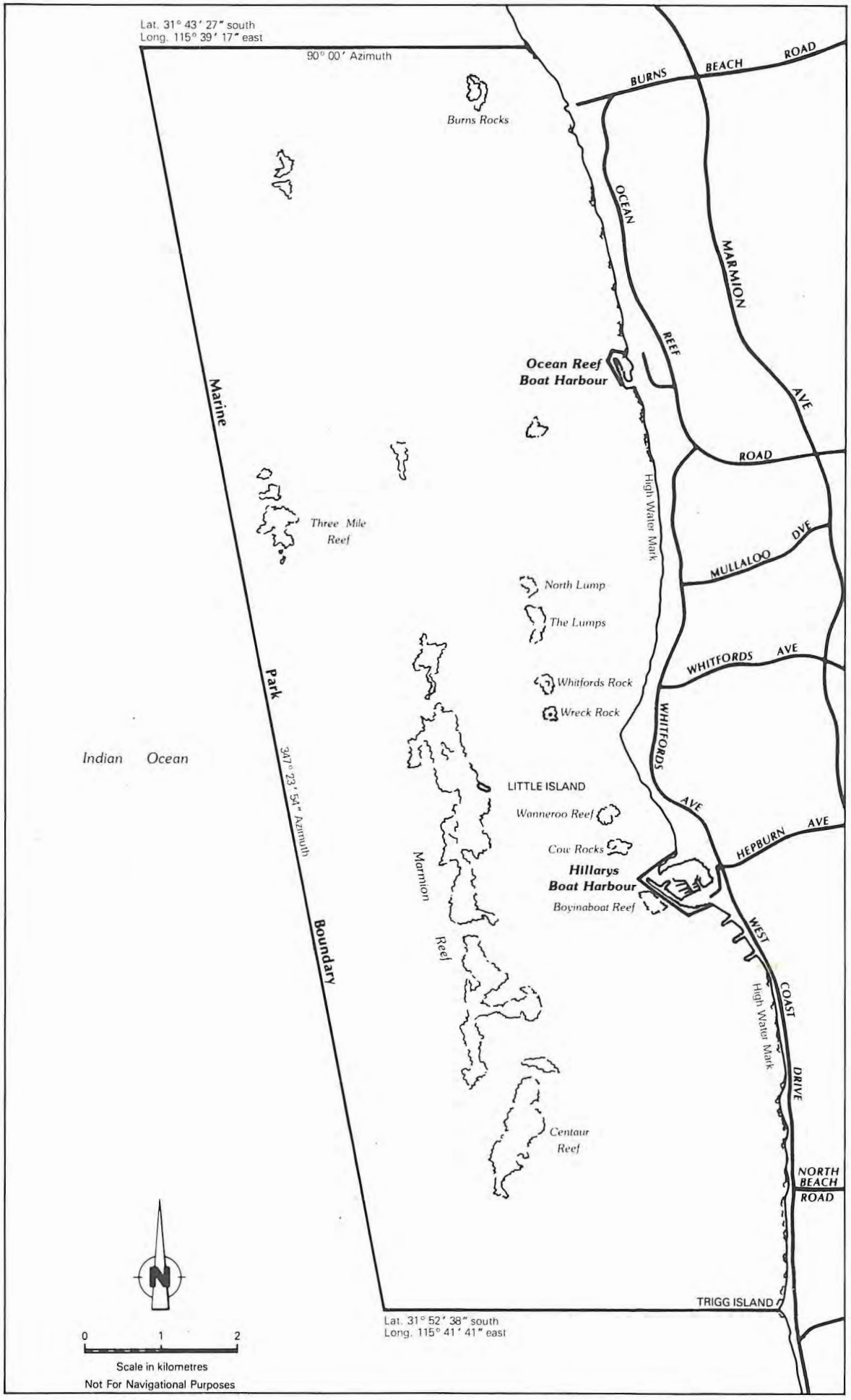

Figure 2. Marmion Marine Park Boundaries Land Administration Miscellaneous Plan 1597

SECTION 3. NATURAL ENVIRONMENT

Descriptions of various aspects of the natural environment in the Park area are contained in separate technical reports, (DCE 1986; EPA 1987). Summaries of available data can be found in the City of Stirling Coastal Report (City of Stirling, 1984), reports on the Wanneroo Coast (Woods, 1984 a,b), the Environmental Review and Management Programme (ERMP) for the Sorrento Boat Harbour (PWD, 1985), which is now known as the Hillarys Boat Harbour, and in the EPA's assessment of the Sorrento Boat Harbour ERMP (EPA, 1985). Only sufficient detail is provided here to summarise aspects of the natural environment in terms of relevance to the area as a whole.

3.1 GEOLOGY

The Park area is underlain by Tamala Limestone, which is covered partially by yellow quartz sand and the younger carbonate-rich Becher and Safety Bay Sands. Tamala Limestone was deposited during the Pleistocene as a series of parallel beach and dune sand ridges. Since deposition, these sediments have cemented into a porous limestone that incorporates solution pipes and dense hard capstone layers. The Becher and Safety Bay Sands were deposited during the Holocene, which covers the period of the last 10,000 years. The upper Safety Bay Sands, which comprises beach, beach ridge and dune sediments, formed in the subaerial environment. The underlying Becher Sands formed beneath seagrass cover.

3.2 GEOMORPHOLOGY

The Park area is characterised by a series of limestone ridges, the largest of which forms the mainland coast. Offshore, three lower ridges form broken chains of islands and reefs that are separated by linear depressions. South of Sorrento and north of Mullaloo the mainland ridge has been eroded to form cliffs and wave-cut platforms (the onshore reefs), with rocky headlands separating small sandy bays. Offshore, the limestone ridges form two chains of reefs which display numerous, complex underwater structures, including cliffs, caves, solution pipes and platforms. The nearshore reefs are about 1 km from the coast, with the offshore reefs about 4 km offshore.

Superimposed on the limestone basement area are a number of landforms associated with the younger sandy sediments. Between Sorrento and Mullaloo, a submarine bank (Lal Bank) has partitioned the nearshore depression into two discrete marine basins or lagoons (Marmion Lagoon to the south and Whitford Lagoon to the north). Adjacent to Lal Bank, the mainland ridge is covered partially by a veneer of transgressive dunes which are stabilised by vegetation. The bank itself is partially covered by a prograded beach ridge plain (Whitford Plain) which is roughly triangular in shape, and which protrudes about 1.2 km beyond the general seaward margin of the mainland coast. The southern half of the plain, which is fronted by a narrow beach and steep dune cliff, is covered by stabilised transgressive dunes. In contrast, the northern half of the plain is lower and beach ridges, which mark successive shoreline positions during growth of the plain, are plainly visible from the ground and from aerial photographs. A wide sandy beach exists between the Hillarys Boat Harbour and Ocean Reef launching facility.

3.3 HYDROLOGY

3.3.1 Groundwater

Potable groundwater is found within an unconfined aquifer in the Tamala Limestone. The limestone is very permeable and consequently the water table gradient is low. Allen (1981) estimated that the groundwater is moving towards the coast at a rate of 90 m/year. It is probable that the limestone aquifer is contiguous with that found in the Safety Bay Sands beneath the Whitford Plain.

As the aquifer is located under an area of increasing urbanisation, and recharged from rainfall, it is susceptible to changes in surface runoff and to pollution from nutrients, pesticides, hydrocarbons and other chemicals. The aquifer is extensively used for irrigation and domestic gardens and municipal reserves.

3.3.2 Sea Water

Mean monthly sea water temperatures in the Park peak at 21-22^{o}C between January and April, and fall to a minimum of about 17^{o}C during July to September (Pearce et al, 1984). There can be a significant drop in sea water temperature very close inshore during early winter, because of direct loss of heat to the atmosphere.

Annual sea water salinity ranges from 36.1 gm/litre in late summer to 35.3 gm/litre in late winter. The salinity peaks and troughs closely coincide with those of annual sea water temperature fluctuations. Within a few hundred metres of the shore, there is local lowering of salinity due to submarine groundwater discharge. Under calm conditions, a low salinity surface layer, extending further offshore, is formed.

Dissolved nutrient concentrations, in the waters of the Park area, are presently low and in the range of concentrations generally reported for temperate coastal waters (Pearce et al, 1984). Dense phytoplankton blooms have not been observed (Johannes & Hearn, 1983), except for blooms of the blue-green alga *Trichodesmium* (Creagh, 1985). Nevertheless nitrate concentrations in groundwater, discharged into the Park area, are two orders of magnitude greater than ambient concentrations in the receiving sea water. The nitrogen load from groundwater discharge to the Marmion Lagoon is estimated to be about half of the requirement for the observed growth of the lagoon's macrophytes (Johannes & Hearn, 1983). Whitford Lagoon receives nutrients from groundwater discharge, and also from the Beenyup (Ocean Reef) secondary treated effluent outfall, located about 1.6 km offshore from the Ocean Reef boat launching facility. The effects of nutrients from both sources have not yet been fully investigated.

3.4 CLIMATE AND OCEANOGRAPHY

The Park area experiences hot, dry summers and mild, wet winters. Air temperatures are similar to those in Perth, where mean daily maximum temperatures vary from 30.3^{o}C in Summer to 17.6^{o}C in winter. Mean daily minimum temperatures are 18.6^{o}C in summer and 9.1^{o}C in winter. Rainfall is moderate (about 880 mm/year) and falls mainly in May through to October. Evaporation in the region is high (about 1980 mm/year).

3.4.1 Winds

The dominant climatic factor is the wind, which generates waves, induces water circulation and transports sand inland. The wind regime in the area is similar to that at Fremantle (Steedman & Craig, 1979, 1983). A diurnal wind variation persists throughout the year, but intensifies during the summer. In winter, winds are predominantly 'offshore' at night and in the morning, and 'onshore' in the afternoon. In summer the sea breeze/land breeze pattern is stronger, and acts additionally to a persistent southerly airstream, so that the resultant wind blows from the southeast at night and in the morning and from the southwest in the afternoon. The passage of

low pressure systems in winter brings northwest winds and gales that back to the west and southwest. The strongest winds blow from the southwest.

Dissipating tropical cyclones can affect the coast during summer, bringing wind gusts up to 70 knots (35 m/s) from any direction. Though these cyclonic events are of short duration, associated winds and high energy waves can have a marked effect on the coast.

3.4.2 Waves

The Park area is subject to a prevailing, refracted, long period (8-12 sec) southwest-west swell that is continually generated by storms and the "Roaring Forties" in the Indian Ocean. The swell is further refracted, reflected and diffracted as it passes through the reef chains.

Superimposed on the swell are locally generated, short-period (4-6 sec) wind waves. During summer, southwest waves are generated by the reinforced sea breeze; during winter, high energy waves are generated during northwest and westerly gales. The occasional summer cyclone may also generate waves from the north, west or south.

Depending on the prominence of the adjacent islands and reefs, wave energy reaching the coast may vary markedly from place to place, with different parts of the coast being subject to swell, waves, swell and waves, or waves with damped swell. The prominent reefs off Mullaloo Point have had a marked influence on the swell, with the result that the area behind the reef complex has been the site of major accumulation of Holocene sands.

3.4.3 Circulation

Water movement on the inner continental shelf off Perth is driven mainly by wind stress; the presence of a regional current is also evident during calmer periods (Hearn, 1983). Water generally flows northward in summer and southward in winter. In the shallow, nearshore waters of the Park area, the local wind driven currents become more dominant relative to the regional water movements. Mean current speeds in the range of 0.05-0.1 m/s are typical (Steedman & Associates, 1976).

The complex chains of reef within and adjacent to the area act as partial barriers, restricting exchange between inshore and offshore waters. Under stable wind conditions, local circulation patterns are established as a result of the interaction between the wind stress forces, and sea floor topography. For example, during

prolonged easterly winds, shallow water over Lal Bank is driven westward, inducing circulation that replaces nearshore water with offshore water (Hearn, 1983). Wind-induced circulation is an important flushing mechanism for the Park area, and may also affect the water temperature regime experienced by reef-dwelling communities. During prolonged calm periods, some flushing of the area is still maintained by the regional current.

Water replacement time in the Marmion Lagoon is estimated to be of the order of one day (Hearn, 1983), although under extended calm conditions, replacement may take up to four or five days.

3.4.4 Tide and Sea Level Changes

The Wanneroo coast generally experiences one astronomic tide per day, though barometric pressure, prevailing wind direction and seasonal changes are also responsible for changes in water level. The normal tidal range is about 0.5 m, though the range in water levels, during a year due to all factors, is of the order of 1 m. Present planning requires consideration of major sea level changes as a result of 'Greenhouse' predictions.

3.5 COASTAL PROCESSES

The following processes operate in the Park area:

- swell-induced onshore transport, in a complex zone of swell wave interference behind the Marmion reefs. This has led to major movement of sediment from the reefs to the mainland coast to form Lal Bank, Whitford Plain and the transgressive dunes that overlay the mainland ridge. At present, minor onshore transport is evident as a thin plume of sand moving across the seagrass covered bank;

- swell-induced longshore transport in the surf zone, which moves sand towards the zone of onshore transport behind the Marmion Reefs. This has minimised longshore sediment losses from within the Park area and has been dominant in maintaining the triangular shape of Whitford Plain;

- local wave-induced longshore transport in the surf zone which moves sediment northward in summer, especially along the shore between Sorrento and Mullaloo Point, and along the rocky coast immediately north of Mullaloo. In contrast, during winter, transport is southwards especially between Ocean Reef and Hillarys

where the coast erodes each winter. Owing to the dominance of the summer wind-wave regime there is a net movement of sediment northwards. This has led to modification of the swell-controlled shape of the Whitford Plain;

- wind transport which blows sand inland on coasts exposed to south-west and westerly winds. With the exception of the 'Little Desert' north of Mullaloo there is, at present, little wind transport except in the areas where human activity has degraded dune vegetation or the dune scarp behind the beach. The presence of large vegetated and stabilised transgressive dunes, however, is evidence of previous periods of major wind transport;

- seasonal recycling of beach and foredune material to an offshore bar, especially along the sandy coast between Hillarys and Mullaloo;

- longer-term (hundreds of years) changes in coastal processes and sand supply, which have led to periods of erosion or stability during the long-term progradation of the Whitford Plain. Whether these changes are cyclical or random is not clear, nor are the periods between each change; and

- long-term evolution of the sandy coastal landforms, which is leading to major changes in shoreline position. It is evident that the sandy Whitford Plain prograded, until about 1,000 years ago, when the southern flank commenced eroding. As this is probably related to a long-term decline in sand supply, this process is likely to continue. Although this process is slow, it must, as demonstrated by beach erosion at Sorrento and Mullaloo, be taken into account in planning for coastal structures which have design lives of a decade or more.

3.6 MARINE BIOTA

There is high habitat diversity in the Park area due to the variation in geomorphology, substrate, water depth, exposure to wave energy and light.

These habitats may be classified into five broad categories which are listed below. The following information on the benthic marine communities is derived from DCE field surveys and from a submission by the Western Australian Museum. Information on habitat preferences of common fish species was collated from interviews conducted with amateur fishing groups, and supplied as part of the submission by the Fisheries Department.

3.6.1 Benthic Communities

(i) Lagoon Subtidal Sandy Sea Floor

The predominant substratum in this habitat consist of calcareous sand plains, stabilised by seagrasses and interspersed with areas of bare sand. The seagrass meadows (mainly *Posidonia sinuosa, Amphibolus antarctica* and *Halophila ovalis*) support a diverse assemblage of animals, and are important as a food source, refuge and nursery for echinoderms, molluscs, crustacea and fish.

(ii) Lagoon Subtidal Limestone Pavement

This habitat occurs in the less sheltered areas of the Marmion and Mullaloo lagoons, with limestone pavement and consolidated sand substrata. The seagrasses (*Amphibolus antarctica, Poisidonia sinuosa,* and *Halophila ovalis*) occur, but are less extensive than in the more sheltered areas. Attached seaweeds, especially the macrophytes (for example *Caulerpa cactoides, Ecklonia radiata,* and *Hypnea episcopalis*) are common on the limestone pavement.

(iii) Lagoon Intertidal Reefs and Little Island

Isolated patch reefs occur in the lagoons (for example Wanneroo Reef). The reef tops have areas of essentially bare rock populated with small gastropods, limpets, coralline algae/*Haliotis* associations, or a mixed algal assemblage which is determined in part by the reef height relative to low tide level and the aspect of the reef. Vertical faces of these reefs are covered with the macroalgae *Ecklonia radiata* and *Sargassum sp.* Overhangs, shaded walls and the roofs of caves are covered densely with a diverse sponge/ascidian/gorgonian/bryozoan assemblage, and grazed by molluscs and several species of starfish. The large baler shell, *Melo miltonis*, occurs in the sand adjacent to the undercut caves. These predatory molluscs feed on other molluscs buried in the sand, but also emerge to feed on the abalone *Haliotis roei*. Hard corals (Order: Scleractinia) such as *Montipora, Favia, Favites, Goniastrea, Plesiastrea* and *Symphyllia* occur on the reefs around Cow Rocks and Wreck Rock, while *Pocillopora damicornis* is moderately common on outer reefs near Little Island (Figure 2). Pelagic fish species such as herring, skipjack, trevally and buff bream are common near these reefs as are many species of wrasse. Little Island provides a resting site for seabirds (gulls, terns, cormorants and others) and Sea-Lions, and Bridled Terns have bred there occasionally.

(iv) Nearshore Reefs and Intertidal Onshore Rock Platforms

Attached macrophytes are dominant on these reefs with red algae (*Dictymenia sonderi, Hypnea episcopalis,* and *Vidalia spiralis*) and brown algae (*Ecklonia radiata,*

Lobospira bicuspidata) being most common. The abalone, *Haliotis roei*, and the turban shell, *Turbo torquatus* , are common in these habitats.

(v) Offshore Shallow Limestone Reefs

This habitat is found on the seaward slopes of the Marmion Reef/Three Mile Reef complex. It is characterised by marked algal zonation related to water depth. In the shallower region, algae adapted to high illumination, such as *Sargassum*, are common. Below about 2 m, dense stands of kelp, *Ecklonia radiata*, and an associated sub-canopy of encrusting coralline algae, dominate. The density of kelp plants decreases with depth down to 25 m, at which point epilithic seagrass (*Thallassodendron sp.*), red algae and sponges predominate.

3.6.2 Fish

So far, monitoring programs have identified 136 species of fish from 70 families in the Park. The common fish species caught in the Park area, and their habitats, are shown in Table 1.

3.7 TERRESTRIAL FLORA AND FAUNA

A description of vegetation in the coastal zone between Trigg Island and Beach Road (City of Stirling/ Shire of Wanneroo boundary) is contained in the City of Stirling Coastal Report (City of Stirling, 1984). The Environmental Review and Management Programme (ERMP) for Sorrento Boat Harbour (PWD, 1985) contains a description of the vegetation in the general area. Vegetation in the coastal zone within the area is similar to that found elsewhere along the Perth metropolitan coast. Little is known about past or present wildlife in the area, although enquiries of Government agencies and interested organisations indicate that the area does not appear to contain any known rare or endangered species.

It is now recognised that within the metropolitan area coastal habitats are rapidly diminishing and there are good reasons to conserve representative examples in sufficiently large areas to ensure viability of their fauna and flora.

TABLE 1: Fin Fish Species Commonly Caught in the Area and Their Preferred Habitats

(from Fisheries Department submission)

FIN FISH	HABITAT
Garfish	Coastal waters over seagrass.
Western school whiting	Sandy bottoms in surf zone and offshore.
Tailor	Juveniles school in surf zones. Larger fish around offshore reefs.
Australian herring	Around coastal reefs - over seagrass areas.
Skipjack trevally	Coastal reef areas.
Yellowtail scad	Surf zone to offshore reefs. Active at night.
Wrasses (several species)	Mostly in association with coastal reefs.
Cobbler	Coastal reef and weed areas. Juveniles associated with nearshore drift macrophytes. Adults feed in the surf zone.
Sea trumpeter	Adults in seagrass beds. Juveniles associated with shoreline drift macrophytes.
Western sand whiting	Surf zone sand, particularly around reefs.
Red mullet	Sand/seagrass areas.
Buffalo bream	Around coastal reefs.
Yellow-eye mullet	Surf zone.
Leatherjacket (several species)	Common over seagrass beds.
Blowfish	Inshore sandy bottoms, but also seagrass and reef areas.
Snook	Offshore weed beds.
Shark species	Offshore roving species throughout the water column .
Australian jewfish	Around reef areas.
Sea mullet - migratory	Just off surf zone.
Australian salmon - migratory	School around offshore reefs and surf zone.

SECTION 4. LEGISLATIVE AND ADMINISTRATIVE ARRANGEMENTS

4.1 ACTS OF PARLIAMENT

There are a number of Acts of Parliament which have a direct bearing on the establishment and administration of the Marine Park. Summaries below relate only to the relevance of Acts to the area.

(i) **Conservation and Land Management (CALM) Act 1984 and Wildlife Conservation Act 1950:** provide for conservation of flora and fauna and their habitats, and for management of certain land and waters. The CALM Act also enables proclamation of marine nature reserves and marine parks.

(ii) **Fisheries Act 1905**: provides for the regulation of professional and amateur fisheries, and their management by the Fisheries Department.

(iii) **Marine and Harbours Act 1981**: makes provision concerning the functions of the Department of Marine and Harbours and for the advancement of efficient and safe shipping and effective boating and port administration.

(iv) **Western Australian Marine Act 1982:** provides for regulation of navigation and shipping.

(v) **Fremantle Port Authority Act 1902-1969:** provides for regulation of commercial shipping and oil spills. Regulation of small craft in the area covered by this Act is delegated to the Department of Marine and Harbours.

(vi) **The Commonwealth Historic Shipwrecks Act 1985 and the State Maritime Archaeology Act 1973:** provide protection for specific shipwrecks declared under the Commonwealth Act and blanket protection for all wrecks over 75 years old.

(vii) **Local Government Act:** The City of Stirling and City of Wanneroo both have by-laws which prohibit or restrict certain activities in specific areas of the coast, including exercising of animals, nude bathing, spearfishing, and use of off-road vehicles.

4.2 MANAGEMENT RESPONSIBILITIES

Figure 3 illustrates the management structure for Marmion Marine Park. Under the provisions of the CALM Act the Department of Conservation and Land Management has responsibility for management of marine parks. It is also responsible for the preparation of management plans.

The Department of Marine and Harbours is responsible for boating activity in the Ocean Reef boat launching facility, in and around Hillarys Boat Harbour, and in navigable waters of the Park. It is also responsible for the general safety of coastal marine traffic. Further, a designated area for water skiing, prohibited anchoring in the region of an OTC cable and boating restrictions at Burns Beach are enforced by the Department of Marine and Harbours. The Fremantle Port Authority boundary overlays the southern part of the Park.

Amendments (November 1988) to the CALM Act confirm that Fisheries Regulations apply in marine parks. Controls of fishing methods, bag limits, and fishing zones are regulated under the Fisheries Act and are managed in collaboration with the Fisheries Department. Management of the coastal land adjacent to the Marine Park is the responsibility of the Wanneroo and Stirling City Councils, operating under the city by-laws.

The ongoing management, monitoring and public education duties required for effective control of the Marine Park, are CALM's responsibility. However, the relevant Acts listed, and their administration, is the responsibility of the appropriate Departments. Close consultation is needed to ensure ongoing management.

A Consultative Committee, convened by CALM, provides a means of liaison between the various agencies with management responsibilities, to ensure integration of management programs for the Marine Park and adjacent coastal land.

4.3 INTERNATIONAL TREATIES

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

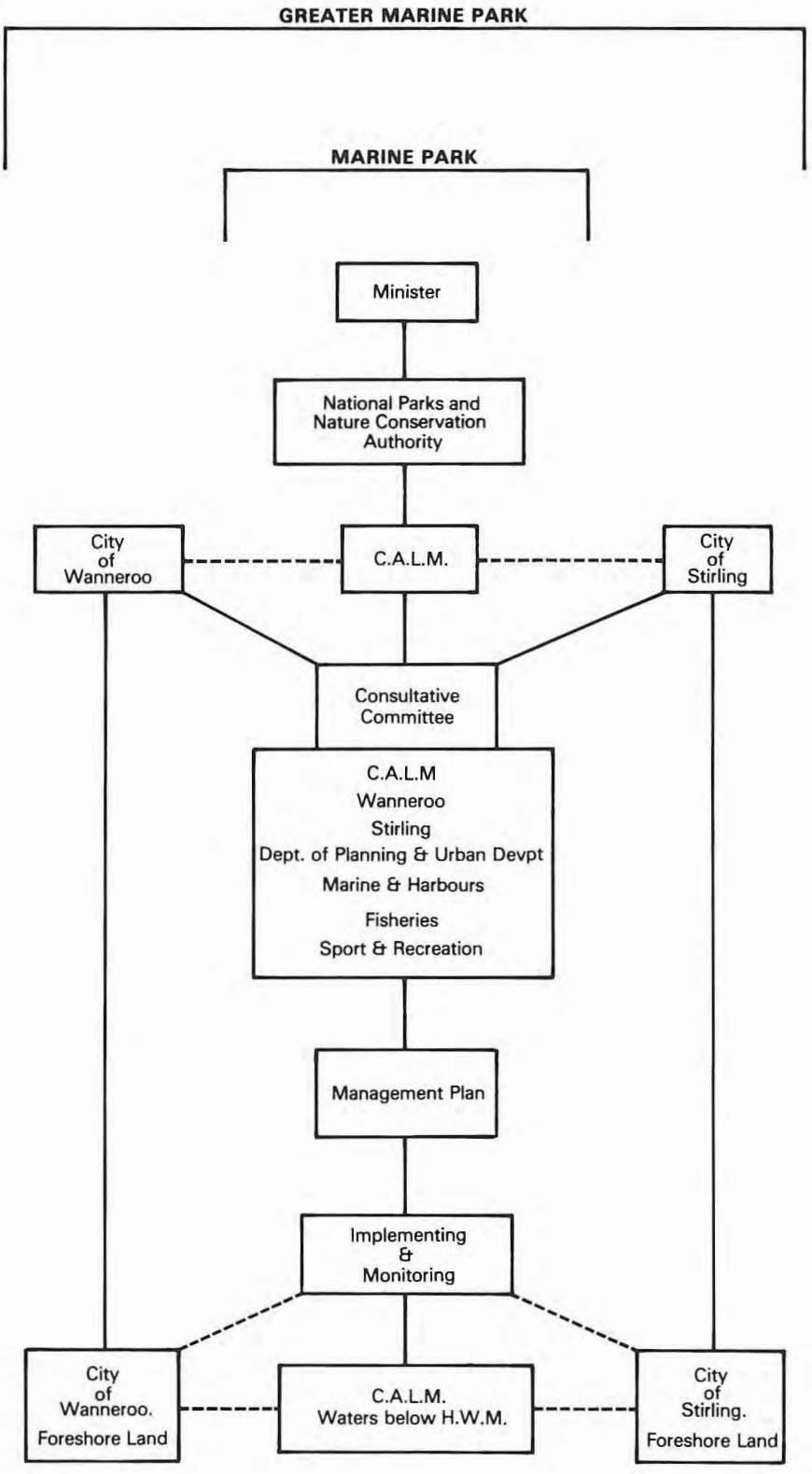

Figure 3. The Marmion Marine Park Consultative Process

SECTION 5. MARINE PARK VALUES

The Marmion Marine Park has certain characteristics which make it attractive. These values are:

5.1 CONSERVATION VALUES

- Marine communities are rich and diverse in the majority of the Park's waters, and represent a variety of marine habitats.

- Some invertebrate species of special interest ,eg. the cowry shells *Cyprea venusta* and *Cyprea friendii* , have major populations in the Park.

- Marine mammals, eg. Sea-Lions, seals, dolphins and whales, allow for interaction with Park users.

- Sea-grass beds in shallow lagoons contribute significantly to energy flows in coastal ecosystems.

- Natural features, along the coastline and below the surface, supplement attractive scenery and coastal panoramas.

5.2 RECREATIONAL VALUES

- Clean sandy beaches and relatively protected waters between outer reefs and the coast allow for a variety of recreational pursuits.

- The coastal waters of Perth are identified as a major recreational site, particularly for residents of the developing northern suburbs.

- Marine habitats support a major resource for recreational fishing, particularly fin fish, rock lobster and abalone.

5.3 HISTORICAL VALUES

- The long established City of Stirling boasts a colourful history of coastal development.

- Shipwrecks, including the historic shipwreck the 'Centaur' are located in Park waters.

5.4 EDUCATIONAL VALUES

- School groups, tertiary institutions and outdoor clubs utilise the coastline for educational projects such as intertidal biology and snorkelling classes.

- Display and interpretation opportunities exist along the coastline such as the Boyinaboat Dive Trail, and at establishments like the Underwater World Oceanarium.

- A 'Friends of the Marmion Marine Park' group is active in the promotion of Park values.

- Facilities at the Hillarys Boat Harbour allow CALM and other Government agencies to target and disseminate information to the public.

5.5 COMMERCIAL VALUES

- Commercial fishing in the Marine Park targets well-researched species such as rock lobster and abalone.

- Opportunities to develop concessionary operations in Park waters exist. Already commercial charter provide dive and whale-watching tours, as attractions for Perth's tourist industry.

5.6 SCIENTIFIC VALUES

- Past biological and oceanographic research in the area by State and Federal agencies has made Marmion Lagoon one of the better understood areas of the WA coastline.

- The Park's proximity to Perth and thus most marine researchers, coupled with its diversity of important marine habitats, make it well suited to future research initiatives.

SECTION 6. MARINE PARK CONSTRAINTS

The coastal waters of the Park area, adjacent to an expanding metropolitan population, provide a varied resource for many user groups. Some of the users consume resources, others do not. In view of the inevitable increasing demand for access to the Park for recreational purposes, consumptive uses (such as fishing) must be properly managed to ensure the biological resources do not decline. It is also clear that some uses conflict with others, and that management techniques such as spatial separation by zoning are necessary to ensure user equity.

6.1 CONSERVATION CONSTRAINTS

- There are relatively small areas of high reef habitat. These are easily accessible and easily affected by uncontrolled human activity.

- Coastal processes (wind and waves) may result in major changes to shoreline positions and affect coastal dune/vegetation systems.

- Increasing community expectations for recreational development centre on Mullaloo Point and surrounding waters; these are areas of the highest conservation values.

- Interaction between wildlife and Park users is increasing in a manner that will be detrimental to local wildlife populations.

- An existing submarine outfall discharging secondary treated effluent from Ocean Reef is proposed to be duplicated within the term of this plan.

6.2 RECREATIONAL CONSTRAINTS

- User conflicts are escalating as a result of an increasing variety of recreational activities in the Park.

- Boat launches have increased 300% since the declaration of the Park.

- There is little information available on the extent of recreational fishing activities in Park waters and their impacts on the ecosystem.

- There is competition between recreational and commercial fishermen for the same limited resources.

- The presence of an OTC cable, a water ski area, a large channel and boat harbours require some restriction and management of recreational activities.

6.3 HISTORICAL CONSTRAINTS

- Traditional use of beaches and local waters is posed as an argument against management initiatives.

6.4 EDUCATIONAL CONSTRAINTS

- Demand by schools, other educational and research institutions for project ideas, presentations, guided excursions and involvement in Park operations is ever increasing.

- Accessibility of flora and fauna results in many applications for permission to collect for personal, scientific or commercial purposes.

6.5 COMMERCIAL CONSTRAINTS

- Developments such as the Hillarys Boat Harbour have resulted in numerous applications for commercial hire such as jet ski hire, parasailing, charter etc.

- Safety requirements and weather conditions prohibit some otherwise possible concessionary operations.

- Lack of suitable concessionary sites which do not conflict with existing recreational use.

- Competition between commercial and recreational fishermen for the same limited resources.

SECTION 7. MANAGEMENT GOALS AND OBJECTIVES

Pages 37 & 38 omitted from all copies

7. MANAGEMENT GOALS AND OBJECTIVES

The fundamental management goals and objectives of marine parks are derived from the CALM Act viz: "...to fulfil 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 reserved as the Marmion Marine Park.

The principal goals for management of Marmion 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;
COMMERCIAL	Manage commercial operations on sustainable yield principles, and ensure that they remain compatible with conservation objectives and recreational use of the Park.

The objectives of management of the Marmion Marine Park are:

- Through consultation, ensure appropriate management of coastal land so that access to the Marine Park is under appropriate control.

- To conserve marine species and habitats, and maintain natural community structures and ecosystems.

- To provide recreational opportunities and facilities which maximise the quality of experience sought by visitors to the extent consistent with maintenance of environmental values.

- To promote an appreciation and understanding of the marine environment, and sites of cultural significance in the Park, through information, interpretation and education.

- To ensure that recreational and commercial fishing is managed without adversely affecting fish populations.

- To provide for tourism through concessionary development to the extent consistent with maintenance of environmental values.

- To ensure that all development and activities are consistent with the maintenance of species populations, habitats, natural features and cultural scenic values.

- To promote research programs aimed at understanding how impacts of use and natural processes affect the maintenance and management of the Park.

SECTION 8. MANAGEMENT ZONING

Zoning separates a park into discrete management units which reflect the characteristics of the natural resources and prescribe priorities for their use. Zoning schemes are designed to meet the needs of all park visitors in an equitable way, providing for the fullest possible range of activities while minimizing conflicts between those seeking to use the park's resources for different purposes.

The zones may be changed at intervals in order to meet changes in visitor requirements. 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 demand for a new priority use. (However, zoning schemes may be changed only in the context of a review of a management plan, with appropriate public participation.)

Zoning schemes also seek to protect inherent values of the park. Particular activities harmful to special properties of particular areas may be excluded from those areas by means of appropriate zone designation.

Activities are therefore defined and regulated within each zone. Zones within marine parks are declared under the powers of Section 62 of the CALM Act, while regulations which apply to the management of each zone will be promulgated from time to time under the Wildlife Conservation Act, the CALM Act and the Fisheries Act.

8.1 ZONING FRAMEWORK

A simple framework for zoning has been developed for the management of marine parks:

- **General Use Zone:** provides for commercial and recreational uses consistent with conservation of natural resources. In this context conservation means fishing within the sustainable limits of fish stocks. Permissible activities are specified by regulations introduced under the powers of the Fisheries Act (all forms of fishing) and the CALM Act (other activities).

- **Recreation Zone:** provides for recreational use consistent with conservation of natural resources. Commercial fishing is not permitted. Recreational fishing is regulated under the powers of the Fisheries Act. Commercial concession

operations for recreation activities may be provided where they are compatible with other uses, and regulated under the powers of the CALM Act.

- **Sanctuary Zone:** provides for the total protection of environmental values and the exclusion of any human activities likely to be damaging. Specified passive recreational uses consistent with the protection of environmental values may be permitted. Fishing is not permitted. Commercial concession operations for recreation activities (eg dive tours) may be provided where there is no conflict with other uses, and regulated under the powers of the CALM Act.

Sanctuary zones will usually cover areas containing vulnerable or special interest biota, which require the highest possible level of protection. Such zones may be selected solely to protect environmental values or to provide visitors or research workers with opportunities to see and study marine life in an undisturbed state.

Restrictions on certain activities including the type of 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 permitted, particularly in Sanctuary Zones.

The occurrence of special natural events, such as seabird breeding, or incidents such as shipwrecks, in all zones may require access to be prohibited or restricted for a specified period of time, or limited to specified means. These limitations may be declared by the Minister from time to time, (after appropriate consultation) under the power of Section 62 of the CALM Act, in addition to the park zoning scheme.

8.2 APPLICATION OF ZONES

The broad principles of zoning will be applied in the Park for the term of the plan as shown in Figure 4, viz:

8.2.1 Sanctuary Zones:

- Little Island Sanctuary Zone: extends in a radius of 300 metres from the surveyed Trig marker of Little Island.

The Lumps Sanctuary Zone: extends 100 metres from the upper reef edge and marked for management purposes.

These Zones serve as; special viewing areas where flora and fauna may be observed free of interference, special protection areas for wildlife, reference areas for scientific study and replenishment areas which may provide recruits to re-populate depleted areas.

8.2.2 Recreation Zones:

Boyinaboat Observation Area: located immediately west of Hillarys Boat Harbour and marked for management purposes.

Waterman Observation Area: located along the shore either side of the Waterman Marine Laboratory and 500 metres to sea, declared and marked for management purposes.

Although recreation is a priority purpose for the majority of the Park, there are commercial rock-lobster and abalone fisheries also which make a recreation zone generally an inappropriate category. Hence, this zonal category is confined to the two small areas designated.

8.2.3 General Use Zone:

This is the remainder of the Park that is not designated as Sanctuary or Recreation Zone. Management of recreational fishing will be a priority throughout the majority of the Park, subject to current amateur fishing regulations. However, there are restrictions on spear-fishing, netting and collecting (Table 2).

Management of commercial fishing within this zone will be under the authority of the Fisheries Act and limited to rock-lobster potting, abalone harvesting and restricted beach seine fishing (see Table 2).

RECOMMENDATIONS

1. *Implement the zoning plan described above and illustrated in Figure 4.*

2. *Proclaim regulations for management of activities and use in the Park consistent with the intention of the zoning plan.*

TABLE 2: Permitted Use and Activities in the Park

	Sanctuary Zone	Recreation Zone	General
Commercial Fishing			
Trawling	No	No	No
Rock Lobster Potting	No	No	Fisheries Licence*
Abalone	No	No	Fisheries Licence*
Netting	No	No	Fisheries Licence*
Collecting (aquaria)	No	No	No
Commercial Activities Other than Fishing			
Dive and Fish Charter	)		
Motorised Water Sports	) Tendered or Assessed		
Non Motorised Water	) on Application		
Sports	)		
Organised Events	)		
Recreation Fishing			
Rod and Line Fishing	No	Yes*	Yes*
Netting	No	No	No
Collecting (aquaria)	No	No	No
Spearfishing	No	No	Restricted
Spearfishing on Scuba	No	No	No
Rock Lobster Fishing	No	No	Yes*
Abalone	No	No	Yes*
Other			
All Research	Permit	Permit	Permit
Placement of markers	Permit	Permit	Permit
Dredging	No	Permit	Permit
Blasting	No	No	No

*As per regulations and requirements of the Fisheries Act.

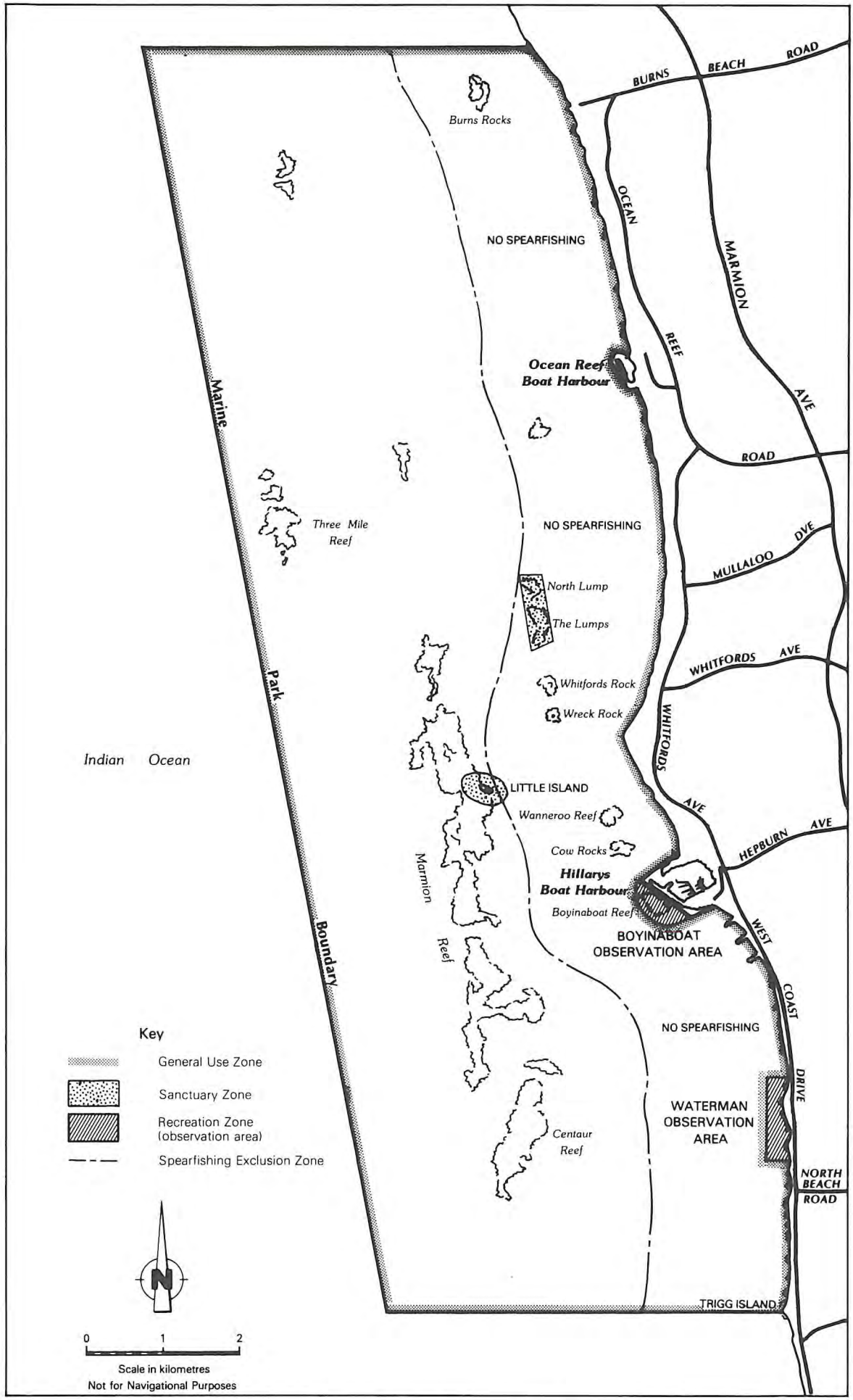

Figure 4. Zoning Plan for the Marmion Marine Park

SECTION 9. OFFSHORE DEVELOPMENT

9.1 NAVIGATION AND OTHER MARKERS

Currently, offshore and onshore markers guide boat users through reefs to both the Hillarys and Ocean Reef Boat Harbours. These markers are provided and maintained by the Department of Marine and Harbours.

Buoys mark sailing courses to the south of the Hillarys Boat Harbour and north of Mullaloo Point. Markers also depict the water ski area at Mullaloo Point. Although there are no definite proposals, marking of zones may be required. Wherever possible this should be done in a sensitive manner and on the coast rather than offshore.

RECOMMENDATION

Offshore markers be installed only where there is a demonstrated need and no effective alternative. The installation of markers in the Park be fully assessed before approval by CALM. Aesthetic design and placement be major considerations.

9.2 MOORINGS

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.

RECOMMENDATION

The location and installation of any markers and moorings of a temporary or permanent nature require approval from CALM. Only approved designs will be permitted. CALM Officers will liaise with the Department of Marine and Harbours on these matters.

9.3 JETTIES

Presently a small fishing jetty is located at North Beach for line fishing. It is the only existing jetty in Park waters. It is not envisaged that additional jetty proposals will be forthcoming due to facilities present at the Hillarys and Ocean Reef Boat Harbours.

RECOMMENDATION

Design, location and installation of any jetty requires the approval of CALM and the Department of Marine and Harbours, and must comply with construction and maintenance standards.

9.4 GROYNES AND BREAKWATERS

Groynes and breakwaters associated with any boat ramp or marina development may have considerable environmental impact. Groynes have been used in stabilisation programs at Sorrento. Proposals for future stabilising groynes at Mullaloo Beach and further breakwaters at Ocean Reef have been put forward.

RECOMMENDATION

Proposals to construct groynes or breakwaters require comprehensive environmental assessment before approval by CALM.

9.5 STRUCTURES AND PLATFORMS

Proposals to place platforms and structures at quality reef areas are common place in areas of high tourist potential. Within the waters of the Marmion Marine Park, however, small platforms are moored off popular swimming beaches as rest sites for swimmers. It is unlikely that large scale proposals will be proposed during the term of this plan.

RECOMMENDATIONS

1. *Any proposals involving the placement of structures on or near reefs shall include 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 prior to any assessment for licence under the Jetties Act.*

3. *Structures and platforms will not be permitted in Sanctuary Zones.*

SECTION 10. ONSHORE DEVELOPMENT

10.1 MARINAS

Marina facilities exist adjacent to, but outside the Park, at Hillarys Boat Harbour and the Ocean Reef launching facility. The Hillarys Boat Harbour provides facilities for concession operations and services to Park visitors. Developments planned for the Ocean Reef facility would change its existing status. Marinas require consideration of equity to all Park users, the environmental impact on natural resources and the effect of increasing subsidiary management costs of the Park.

RECOMMENDATIONS

1. *Any proposed construction of marinas in the Park be considered on merit.*

2. *Any marina development be subject to environmental impact assessment and meet the requirements of CALM.*

10.2 BOAT RAMPS

The Hillarys Boat Harbour (4 ramps) and Ocean Reef launching facility (8 ramps) allow safe launching and retrieval of up to 700 trailer craft per day. Small craft launch from: the beach at Mullaloo Point, a small shallow water ramp at Trigg Island and a private ramp at the Marmion Angling and Aquatic Club. The projected increase in population in the North West Corridor is likely to increase boat ownership by up to 200% during the term of this plan.

RECOMMENDATION

Proposed sites, development and construction methods for boat ramps other than those identified must have prior approval from CALM.

10.3 DRAINAGE AND DISCHARGE

Stormwater drains enter coastal waters at only a few locations bordering the City of Stirling and the City of Wanneroo within Park waters. Secondary treated effluent from the Beenyup Waste Water Treatment Plant is pumped 1.6km offshore. Presently, a

proposal exists to duplicate the outfall. The proposal was the subject of a report (EPA 1990) which gave qualified approval, subject to conditions ensuring that the combined nutrient loading from both pipelines do not exceed the maximum loads set for the original single outfall. The EPA also required the W.A. Water Authority to conduct studies of water circulation, nutrient levels, and other matters relating to the potential impacts of the Beenyup outfalls.

RECOMMENDATIONS

1. *Liaison be maintained between the Water Authority, EPA and CALM to ensure adequate conditions are set to minimise detrimental environmental effects of outfalls.*

2. *The EPA recommendations limiting nutrient levels and requiring appropriate research and monitoring programs will be implemented.*

SECTION 11. RECREATION ACTIVITIES

11.1 FISHING

Recreational fishing is an important activity in the Park. Beach and rock fishing are popular along the coastline. Fishing from boats or from the shore in the General Use and Recreation Zones is available in 97% of the waters in the Park. An aim of management is that fish stocks be maintained and species that are restricted in abundance or distribution will be protected. Recreational fishing will be prohibited in the Sanctuary Zones.

Certain species of molluscs and crustaceans commonly taken for consumption are treated as fish for the purposes of this plan. Appendix 1 lists fish species that may be taken for consumption from Park waters, as per Fisheries Act Regulations.

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 rapid stock depletion in accessible areas and cause conflict with the recreation experience of other divers. Spearfishing is excluded from the areas zoned Sanctuary and within 1800 metres of the shoreline to enable an assessment of the full impact of this activity and to maintain areas of high use free from conflicting use.

Wilson, Hancock and Chittleborough (1979) suggest that netting and other human pressures may have reduced fish stocks in the Swan River during the early development of Perth, but there is no detailed scientific study on the impacts of net fishing in the inshore coastal waters of Western Australia.

Net fishing in the past has caused some interference and concern to other recreational activities in the waters of the Park. The non-selectiveness of net fishing is not within the conservation objectives of management and presently there is a total ban on all amateur netting within the Park, excepting the use of drop nets for crabs.

Recreational fishing is controlled under the recreation fishing regulations of the Fisheries Act. Current bag limits which apply generally, also apply within the Park. As the research and fish stock monitoring studies proceed it may become apparent that the current bag limits need revision 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 such as Boyinaboat Reef, will require restrictions to be applied to limit conflicts.

RECOMMENDATIONS

1. *Recreation fishing in the Park be regulated according to the fishing regulations proclaimed under the Fisheries Act and in consultation with CALM.*

2. *Fish populations be inventoried and monitored.*

3. *If any species of fish is shown to be in need of special protection, regulations 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. *Recreation fishing in the Park be prohibited in Sanctuary Zones.*

6. *Recreational fishing methods in the Park not include the use of traps, set-lines or nets. Only hand held rods, lines with no more than three hooks attached, rock lobster pots and drop nets for crabs may be used. Spearfishing using compressed air be prohibited.*

7. *Recreation fishing by net, except for drop nets for crabs, remain prohibited.*

8. *Recreation fishing using gidgees, hawaiian slings, spearguns or any form of spear defined under the Fisheries Act remain prohibited within 1800 metres of the shore and in Sanctuary Zones.*

9. *Competition spearfishing be prohibited in the Park.*

10. *Fish aggregating devices not be allowed in the Park.*

11. *Charter boat operations providing services for recreational fishing be subject to permits issued by CALM under standard concession arrangements.*

11.2 COLLECTING

11.2.1 Abalone

Seasonal abalone fishing by amateurs has been determined by the Fisheries Department. The history of abalone collecting from onshore reefs in the Park shows

suspended seasons, early closures, commercial fishing concerns, community tension, unsafe practices and media interest. Recent seasons have become heavily restricted to allow for better management and have included educational programs to aid in management. Recent research surveys co-ordinated by the Fisheries Department indicate that stocks are in a healthy state (Fisheries Department Submission).

RECOMMENDATIONS

1. *Abalone harvesting by recreational and professional fishermen be allowed in the General Use zones of the Marine Park, with appropriate season restrictions.*

2. *The restrictions and limitations on abalone harvesting within the Park be determined yearly, after consultation between CALM and the Fisheries Department.*

3. *Fishing impact, stock assessment, management strategies, enforcement and education capabilities be assessed yearly prior to declaration of the season.*

11.2.2 Live Specimens

Collection of live animals from the Park, particularly molluscs and aquarium fish, is believed to have a dramatic impact, detracting from the recreational and educational experiences which the Park offers. All species of molluscs occurring in the Park can be found outside the Park boundaries. Some species are vulnerable to exploitation beyond their natural capacity to sustain viable populations and are in need of protection.

RECOMMENDATIONS

1. *The collection of any live animals, other than for personal consumption, remain prohibited except by permit. Species which may be taken alive for personal consumption are listed by gazettal notices and are subject to size and bag limits according to the recreation fishing regulations (see Appendix 3).*

2. *Collection of live mollusc shells or other invertebrates for study and reference purposes be assessed for provision by permit only as required by the Wildlife Conservation Act.*

3. *No collecting be permitted in Sanctuary Zones or Recreation Zones.*

4. *Permits will not be provided for vulnerable species.*

11.3 DIVING

In contrast to spearfishing and shell collecting, scuba diving and snorkelling for observation, underwater photography or diving-skill exercises such as underwater navigation, are not normally destructive activities. The many sheltered reefs and wide diversity of biota in the area already attract many divers. Diving activities have minimal impact on marine environments and should be encouraged in the Park.

SCUBA diving within the Park has increased considerably. The development of underwater nature trails and involvement of amateur divers in fauna surveys are now established practices in the Park.

RECOMMENDATIONS

1. *Snorkel and SCUBA dive trails be established and maintained in suitable areas.*

2. *Information be provided on marine natural history and where possible, guided tours be conducted by appropriately trained staff.*

3. *Procedures for the recovery and treatment of diving accidents within the Park be established in accordance with approved practices.*

4. *Operators of commercial dive tours for Park visitors be required to hold a concession permit and operate within codes of conduct for diving in the Park. Other users be encouraged to follow safety procedures.*

11.4 BOATING

Access to Park waters for small boats is provided. Many vessels and larger boats travel through Park waters to other destinations. Up to 1000 vessels have been launched in Park waters in a day.

The use of boats has increased dramatically in recent years. It is important that management is able to respond to the varying needs of boating activities. The capacity to manage boating activities, including the provision of boats and qualified staff, will need to be assessed at regular intervals.

RECOMMENDATIONS

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. *Boating restrictions be enforced in Park waters, in consultation with the Department of Marine and Harbours, if conservation and safety recommendations are threatened.*

11.5 SURFACE WATER SPORTS

Where conflicts arise between surface water sports (including wind surfing, sailing, water skiing, 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 water skiing) create conflict with other uses of the Park. Such activities need to be confined to selected areas, in consultation with the Department of Marine and Harbours.

RECOMMENDATIONS

1. *Where conflicts arise between surface water sports and uses which are orientated towards passive appreciation of marine fauna, the later activities will have precedence.*

2. *Use of motorised and non-motorised craft for recreation purposes, other than in the direct pursuit of fishing, be restricted to areas designated for such use, in consultation with the Department of Marine and Harbours.*

3. *Organised sporting events will require prior approval of the Park Manager and will be required to comply with conditions imposed.*

SECTION 12. COMMERCIAL ACTIVITIES

12.1 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. Few commercial licences operate within 1800 metres of high water mark where recreational use is high.

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

Three commercial fisheries exist in the waters of the Park. They are rock lobster fishing by pot, abalone fishing by hand and beach seining.

RECOMMENDATIONS

1. *No new commercial fishery, other than those presently existing, will be licensed in the Park.*

2. *No new commercial fishing technique, other than those presently approved, will be permitted in the Park.*

12.1.1 Rock Lobster Fishery

The Park occupies 30% of transects 315 and 316 of the western rock lobster (*Panulirus cygnus*) fishery. The Park supplies about 80,000 kg of rock lobster annually, approximately 0.7% of the total Western Australian catch. Although up to 30 boats fish the two transects, approximately 10 boats on average work Park waters during peak season (Fisheries Department Submission).

RECOMMENDATIONS

1. *Commercial rock lobster fishing licences in the General Use Zone of the Park be subject to monitoring of stocks by the Fisheries Department.*

2. *Commercial rock lobster fishing be permitted within 1800 metres of high water mark and be subject to monitoring of impact on individual reefs and conflict,*

with recreation users. If there are indications of intense fishing pressures or conflict, the position will be reviewed.

3. *Commercial rock lobster fishing be prohibited in Sanctuary Zones and Recreation Zones.*

12.1.2 Abalone Fishery

Up to 20% of the Western Australian total annual commercial catch of Roe's abalone (*Haliotis roei*) is taken from onshore reefs within the Park. The catch is taken by diving and is restricted to only a few weeks of the year during the "season". On average, only five licences operate in Park waters during this period at any one time (Fisheries Department Submission).

RECOMMENDATION

Commercial abalone fishing be permitted in the General Use Zone as a "seasonal" fishery to be determined yearly after consultation between CALM and the Fisheries Department.

12.1.3 Beach Seining

Presently, only six beach seining licences are permitted to net within Park waters. There are restrictions on fishing times, the licences are not transferable and will lapse as each fisherman ceases to work the area.

Mullet, yellow eye mullet and whitebait migratory species, not normally the pursuit of recreational fishermen, are target species. Beach seining requires beach access by four wheel drive vehicles and therefore requires approval from local authorities for access.

RECOMMENDATIONS

1. *Commercial beach seining and netting by approved commercial fishermen for specific species will be permitted to continue within the Park on the understanding that authority granted to each fisherman is not transferrable and will lapse as each fisherman retires or leaves the area.*

2. *Commercial beach seining will be phased out in the Park.*

12.2 FISHING CHARTER

The potential for an increase in charter fishing 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;

- ensure that high standards are maintained and that Park visitors have a quality experience; and

- ensure that the commercial viability of the industry is sustained by regulating the number of concessions.

It is important that charter operations develop a common code of ethics and standards of service.

It is important that 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.

RECOMMENDATIONS

1. *All fishing charter vessels operate in accordance with CALM policy on concessions and meet the requirements of the Department of Marine and Harbours and the Fisheries Department for recreation fishing operations.*

2. *Charter fishing be restricted to the General Use Zone.*

3. *Permits for charter fishing be managed on the principle of a restricted entry fishery and be endorsed with appropriate requirements for operation.*

12.3 CONCESSIONS

Departmental policies on letting and operations will need to be implemented consistently and impartially. There will be a requirement to clearly define areas and conditions of operation.

RECOMMENDATIONS

1. *Glass-bottom reef-viewing tours, charter fishing vessels, dive tours and any other services provided by private commercial operators within the Park be subject to assessment and permits issued by CALM under standard concession arrangements.*

2. *Onshore leases for the purposes of operating equipment hire or other services within the Park be subject to assessment and permits issued by CALM under standard concession arrangements after liaison with the Department of Marine and Harbours and local councils.*

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 and Observation areas be stringently assessed.*

12.4 AIRCRAFT

Both military and civil aviation pilots need to be aware of the impact that low flying over the Park has on some wildlife and 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 disturbance of wildlife and conflict with the Park user, while recognising the operational objectives of the Air Force and operational requirements for civil aviation aircraft.

RECOMMENDATION

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

12.5 MARINE POLLUTION

Appropriate guidelines need to be provided and regulations implemented in order to minimise pollution of marine waters by fuel or chemicals. The discharge of wastes, including plastics, into the Park from adjacent land or waters also requires appropriate regulation.

RECOMMENDATIONS

1. *Adoption of appropriate procedures for re-fuelling and cleaning of boats be a condition of charter and other boat use in the Park and adjacent harbours.*

2. *A contingency plan for spills of polluting substances be formulated for the Park.*

12.6 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.

RECOMMENDATION

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.

SECTION 13. LAND MANAGEMENT

13.1 MARINE PARK

The management responsibility of CALM is to the high water mark, or the outer boundaries of the Hillarys and Ocean Reef Boat Harbours. Recreational use of the coast is increasing rapidly, requiring planning and management if environmental, social and economic values of the coastal region are to be retained. Foreshore areas are governed by management plans produced by the City of Stirling and the City of Wanneroo. No documented management strategy for recreational activities exists for the Hillarys Boat Harbour.

RECOMMENDATION

Management of coastal reserves be complementary with the objectives of the Park. Consultation be required between CALM, the City of Stirling, the City of Wanneroo and the Department of Marine and Harbours on a regular basis.

13.2 LITTLE ISLAND

Little Island has been declared part of the Park under the Land Act. The attraction of Little Island is its small sandy beach (often awash) and resting resident sea-lions. Increased visitation has led to conflict between users and disturbance to the resting wildlife, including Sea-Lions and sea-birds. The waters surrounding Little Island offer safe anchorage and allow for swimming and snorkelling in safe conditions. Interaction with the Australian Sea-Lion in the surrounding waters is a common occurrence. Little Island is within the proposed Little Island Sanctuary.

RECOMMENDATIONS

1. *Onshore activities on Little Island continue to be restricted to viewing sea-lions only. Picnics and sunbathing be prohibited.*

2. *Recreational activities and their impact on wildlife will be subject to ongoing monitoring by CALM to determine the level of protection to be implemented.*

3. *Public awareness programs will continue to be implemented to combat any excessive levels of disturbance.*

SECTION 14. EDUCATION

14. EDUCATION

Meeting the public's expectations of the Park will be a major challenge. Education and interpretation programs will be important. There is a high demand for educational material and guided interpretation of the reef. Presently, the 'Friends of Marmion Marine Park' play an important role in achieving this goal.

RECOMMENDATIONS

1. *An interpretation program be developed for the Park.*

2. *A formal volunteer program be established to involve participation by local community members in day to day management of the Park.*

3. *CALM officers and volunteers 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 arrange special natural history tours.*

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

7. *CALM provide the public with printed and electronic interpretative material that deals with aspects of the marine and coastal natural history of the Park.*

8. *Information be provided on marine natural history and where possible, guided tours be conducted by appropriately trained staff and volunteers.*

9. *Ensure that adequate information be provided for all boat users on safety requirements, conditions at sea and boating ethics.*

10. *Recognition of the role of the 'Friends of the Marmion Marine Park' be reflected in liaison and support by CALM, subject to available resources.*

SECTION 15. RESEARCH

15. 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.

RECOMMENDATIONS

1. *Research into the basic ecology and oceanographic processes of the Park be continued and all research programs be sanctioned by permit.*

2. *Monitoring of fish populations be carried out in conjunction with the Fisheries Department.*

3. *Monitoring and periodic special surveys of recreational and commercial use in and adjacent to the Park be carried out.*

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

5. *Monitoring programs will be implemented to determine the maintenance or replenishment of habitat and species diversity in Sanctuary Zones as compared to Recreation and General Use Zones.*

6. *Research projects carried out within the Park by other agencies will be supported to the level of available resources.*

SECTION 16. ADMINISTRATION OF MANAGEMENT

16.1 INTERAGENCY AGREEMENT

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

A Memorandum of Understanding will also be established between the Department of Marine and Harbours and CALM for management of boating and other regulations administered by the Department of Marine and Harbours and with local councils involved in coastal management.

RECOMMENDATION

Implement management agreements with relevant Government agencies to ensure efficiency of management operations and regulations.

16.2 CONSULTATIVE COMMITTEE

The Marmion Marine Park Consultative Committee was established to provide a communication mechanism with the local community and assistance in formulating the management plan for the Park. Owing 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 Management Consultative Committee has been advantageous. The Consultative Committee has been convened by CALM with representation from both local and State Government agencies with a direct interest in management of the Park.

RECOMMENDATION

The Consultative Committee continue to be convened to advise in management of the Park.

16.3 SEARCH AND RESCUE

A number of boating accidents have occurred in the Park, some resulting in fatalities. Drownings have also occurred on coastal reefs. Most accidents appear to have been due

to a combination of factors including inadequate knowledge of local conditions, inappropriate boats and safety equipment for the prevailing seas and overloading. Inexperience or incompetence are often significant contributing factors in accidents. A search and rescue management scheme is presently being developed by the Police Department.

RECOMMENDATIONS

1. *Information and guidance on all aspects of safety at sea in the Park be provided to Park users.*

2. *Management staff will be trained in skills, through involvement with rescue authorities, to promote safety and aid Park users.*

16.4 SURVEILLANCE AND ENFORCEMENT

Surveillance is important because it provides information on patterns of use which affect allocation of resources, detect breaches of regulations, and aid 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.

RECOMMENDATIONS

1. *Contact with Park users will be the priority role of field staff to provide information, record use, detect infringements and to monitor ecosystems.*

2. *CALM officers will develop their training and skills so as to be able to conduct these duties professionally while developing a working relationship with the recreating public.*

SECTION 17. POTENTIAL IMPACTS OF PARK MANAGEMENT

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 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 and competition will increase at preferred fishing areas.

It is possible charter boats, snorkelling 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 to be one step ahead of recreation demand. It will, however, be difficult to anticipate changes in 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 require ongoing assessment.

Equity of use can be expressed as either the social value of a recreational 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 need to be aware that changes will occur and some traditional uses may change.

SECTION 18. REVIEW PROCESS

18. 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 necessary.

BIBLIOGRAPHY

Allen, A.D. (1981) Groundwater Resources of the Swan coastal plain, near Perth, Western Australia. In *Groundwater Resources of the Swan Coastal Plain.* (Editor B.R. Whelan.) pp.29-74. (CSIRO, Perth).

City of Stirling (1984) City of Stirling Coastal Report. WA Government Printer, Perth. 162 pp.

Creagh, S. (1985) Review of literature concerning blue-gre en algae of the genus *Trichodes mium* WA Department of Conservation and Environment, Perth. Bulletin 197. 33 pp.

Department of Conservation and Environment (1981). *The Darling System Western Australia : Proposals for Parks and Reserves. The System 6 Study Report to the Environmental Protection Authority.* WA Department of Conservation and Environment, Perth. Report No.8 347 pp.

Department of Conservation and Environment (1985) *Draft Management Plan : Proposed M10 Marine Park.* Reports and Recommendations by the M10 Marine Park Study Team. 124 pp.

Department of Conservation and Environment (1986) *Seminar on the Proposed M10 Marine Park* proceedings of the Seminar, held at the Marmion Angling and Aquatic Club, Perth Western Australia, June 12, 1985. pp.205.

Environmental Protection Authority (1983). *Conservation Reserves for Western Australia as recommended by the Environmental Protection Authority - 1983. The Darling System - system 6.* Part 1 : General Principles and Recommendations. 33 pp. Part 2 : Recommendations for Specific Localities. 308 pp. (WA Department of Conservation and Environment, Perth.) Report No. 13.

Environmental Protection Authority (1985). Proposed Sorrento Boat Harbour: Public Works Department. Report and Recommendations by the Environmental Protection Authority. WA Department of Conservation and Environment, Perth. Bulletin 196. 56 pp.

Environmental Protection Authority (1987). Collected Technical Reports on the Marmion Marine Park, Western Australia. T.S. 19. 240 pp.

Environmental Protection Authority (1990). Proposed Beenyup Waste Water Treatment Plant and Ocean Outfall Duplication in Marmion Marine Park. Bulletin 393.

Fisheries Department of Western Australia (1988). Recreational Fishing. A Guide to the Rules WA Government Printer, Perth pp.5-17, pp.23-32.

Hearn, C.J. (1983). Influence of water circulation within Western Australian limestone reefs on rock lobsters and their habitats. Department of Civil Engineering, University of Western Australia, Nedlands. Environmental Dynamics Report ED-83-053.

Johannes, R.E. & Hearn, C.J. (1983). The effect of submarine groundwater discharge on nutrient and salinity regimes in a coastal lagoon off Perth, Western Australia. Department of Civil Engineering, University of Western Australia, Nedlands. Environmental Dynamics Report ED-83-058.

Pearce, A.F., Johannes, R.E., Manning, C., Rimmer, D.W. and Smith, D.F. (1984). Hydrology and nutrient data off Marmion, Perth, 1979-1982. CSIRO Marine Laboratories Report 167.

Public Works Department (1984). Environmental Review and Management Program for Sorrento Boat Harbour. Report to WA Public Works Department by Scott & Furphy Engineers Pty Ltd and LeProvost, Semeniuk & Chalmer. Volume 1 : Report, 186 pp. Volume 11 : Technical Appendices, 148 pp.

Scott & Furphy Engineers Pty Ltd (1979). Coastal Nodes Development Plan. Report to Shire of Wanneroo. 70 pp.

Semeniuk, V. & Searle, D.J. (1985). The Whitfords Cusp - its geomorphology, stratigraphy and age structure. *J. Roy. Soc. WA*. 68.

Steedman, R.K. & Associates (1976). Beenyup effluent outfall. Physical oceanographic studies, December 1975-March 1976. Report for Metropolitan Water Supply Sewerage and Drainage Board, Perth, WA.

Steedman, R.K. & Craig, P.D. (1979). Numerical model study of circulation and other oceanographic aspects of Cockburn Sound. Report to Cockburn Sound Study Group WA Department of Conservation and Environment.

Steedman, R.K. & Craig, P.D.(1983). Wind driven circulation of Cockburn Sound. *Australian Journal of Marine and Freshwater Research.* 34, 198-212.

Wilson, B.R., Hancock, D.A. & Chittleborough, R.G. (1979). The Sea. Pp. 146-182 in *Environment and Science*. (Editor B.J. O'Brien). University of Western Australia Press, Nedlands.

Woods, P.J. (1984a). Local coastal management plan, Wanneroo sectors 2 & 3, Sorrento to Burns Beach. Report to the Shire of Wanneroo, 48 pp.

Woods, P.J. (1984b). Results of the Wanneroo Coastal Study, Draft Goal, Objectives and Recommendations for a Coastal Management Policy. Report to Shire of Wanneroo, 116 pp.

APPENDICES

Fish permitted to be taken in the General Use Zone of the Marmion Marine Park by methods promulgated from time to time under the Fisheries Act.

a) Any species of fish of the classes Osteichthyes (bony fishes) and Chondrichthyes (cartilaginous fishes).

b) Any species of fish of the class Cephalopoda commonly known as cuttlefish, squid and octopus.

c) The species of the class Crustacea known as *Panulirus cygnus* (western rock lobster) and *Portunus pelagicus* (blue swimmer crab).

d) The species of the class Mollusca known as *Haliotis roei* (Roes abalone).

All other marine life is gazetted as protected flora and fauna under the Wildlife Conservation Act.

Western Australian
FISHERIES ACT 1905
MARMION MARINE PARK OCEAN REEF AND HILLARYS BOAT HARBOURS
FISHING RESTRICTIONS
Notice No. 376

516/85
MADE by the Minister pursuant to sections 9, 10 and 11 of the Act.
Citations
1. This Notice may be cited as the *Marmion Marine Park Ocean Reef and Hillarys Boat Harbour Fishing Restrictions Notice 1989.*

Prohibition on taking fish
2. All persons are prohibited from taking any fish whatsoever in the waters described in the Schedule except as hereinafter provided.

Licensed professional fishermen
3. The holder of a professional fisherman's licence shall not take any species of fish for sale in the water described in the Schedule except that -
(i) rock lobster may be taken by means of rock lobster pots used from a boat authorised to operate in the West Coast Rock Lobster Limited Entry Fishery.
(ii) Roe's abalone may be taken by a person authorised to take abalone within Zone 3 of the Abalone Limited Entry Fishery; and
(iii) other fish may be taken with the use of a hauling net by a person authorised in writing by the Director in the waters of the Marmion Marine Park provided such net is not used within the Ocean Reef and Hillarys Boat Harbours and within 200 metres seaward of the groynes and entrances of those harbours.

Use of nets to take crabs
4. Any person may use a hand held scoop net or drop net to take crabs.

Use of spearguns etc
5. Any person may use a speargun, harpoon, hawaiian sling and all other similar pointed instruments to take -
(i) any species of fish of the classes *osteichthyes* (boney fishes) and *Chondrichthyes* (cartilaginous fishes); and
(ii) any species of fish of the class *Cephalopoda* commonly known as cuttlefish, squid and octopus; provided that a speargun, harpoon, hawaiian sling and all other similar pointed instruments are not used to take any fish whatsoever in any waters within 1800 metres of the high water mark of the west coast of Australia.

Use of other means of capture
6. Any person -
(1) being the holder of a recreational fishing licence authorising the taking of rock lobster, may take the species of fish of the class Crustacea known as *Panulirus cygnus* (western rock lobster) -
(a) by hand; or
(b) by means of rock lobster pots;
(2) may take the species of fish of the class Crustacea known as *Haliotis roei* (Roe's abalone), provided that the taking is permitted in accordance with Fisheries Notice No. 375 (Metropolitan Recreational Abalone Fishery);
(4) may take the species of fish of the class *Cephalopoda* commonly known as octopus by means of octopus traps;
For the purpose of this Notice an octopus trap is a device constructed of one or more pieces of tubing, having a diameter not exceeding 200 millimetres, is not baited and is used only for the purpose of taking or attempting to take octopus.
(5) may take -
(a) any species of fish of the classes *Osteichthyes* (boney fish) and *Chondrichthyes* (cartilaginous fishes); and
(b) any species of fish of the class *Cephalopoda* commonly known as cuttlefish, squid and octopus, by means of -
(i) a hand line; or
(ii) a rod, reel and line, with no more than three hooks attached.

Exceptions

7. Where an exception to the prohibition contained in clause 2 is granted, any such exception does not extend to or in any way amend the requirements or restrictions imposed pursuant to the Fisheries Act 1905 on the taking of any fish referred to in this Notice.

Cancellations

8. Notices Nos. 280, 281, and 283 published in the *Government Gazette* of 11 December 1987, are cancelled.

Schedule (Clause 2)

(a) All that portion of the Indian Ocean lying within the boundaries of the Marmion Marine Park Reserve No 1 bordered in red on Department of Land Administration Miscellaneous Plan numbered 1597, but not including those waters within the Marmion Marine Park described in Fisheries Notice No. 329; and

(b) All waters within the Ocean Reef Boat Harbour and the Hillarys Boat Harbour.

Dated this 31st day of January 1989

JULIAN GRILL
Minister for Fisheries

[Extract from Government Gazette No 394, 10 February 1989]

WILDLIFE CONSERVATION ACT 1950
(Section 14)
Notice
Fauna of the Marmion Marine Park

CALM 007143F2013.

PURSUANT to the powers conferred by section 14 of the Wildlife Conservation Act 1950, I hereby declare as follows -

1. That there shall be an open season in respect of those species of fauna described in the First Schedule hereunder in the whole of that part of the State which lies within the boundaries of Marmion Marine Park as described in the Second Schedule hereunder.

2. A person may take fauna of the species described in the First Schedule hereunder without a licence issued under the Wildlife Conservation Act 1950 provided that any fauna so taken is taken in accordance with the Fisheries Act 1905.

3. For the purposes of paragraph 2 of this Notice, fauna of the species described in the First Schedule hereunder shall be fauna that are fish within the meaning of the term fish as it is defined in the Fisheries Act 1905.

4. A person shall not take any fauna within the area defined in the Second Schedule hereunder, other than fauna of the species described in the First Schedule hereunder, unless that fauna is taken in accordance with the Wildlife Conservation Act 1950.

BARRY HODGE
Minister for Conservation
and Land Management

2

First Schedule

1. Any species of the class *Osteichthyes* (boney fish).

2. Any species of the class *Chondrichthyes* (cartilaginous fish).

3. Any species of the class *Cephalopoda* (cuttle fish, squid and octopus).

4. The species of the class *Crustacea* known as *Panulirus cygnus* (western rock lobster), *Ovalipes australiensis* (white-spotted sand crab) and *Portunus pelagicus* (blue swimmer crab).

5. The species of the class *Mollusca* known as *Haliotis roei* (Roe's abalone).

Second Schedule

All that land and waters comprising Marmion Marine Park -

1. Marine Park Reserve No 1. (All that area delineated and shown bordered red on Land Administration Miscellaneous Plan 1597. Public Plans Swan 1:2 000 05.01 to 05.05 inclusive and Perth 1:2 000 06.37 and 07.33 to 07.37 inclusive).

2. Reserve No. 39782 (Marine Park) Swan Location No. 10854. (Reserve/Diagram 605, Little Island. Public Plan Swan 1:10 000 1.2)

3. Reserve No. 39783 (Marine Park) Swan Location No. 10855. (Reserve/Diagram 606, Burns Rocks. Public Plan Swan 1:10 000 1.2).

[Extract from Government Gazette No 116, 11 December 1989]

WILDLIFE CONSERVATION ACT 1950
(Section 14)
Notice
Invertebrate Fauna

CALM 019316F3805 and 007143F2013.
PURSUANT to the powers conferred by section 14 of the Wildlife Conservation Act 1950, I hereby declare as follows

1. That the provisions and operations of the notice published in *Government Gazette* (No. 56) of 11 August 1978 are hereby cancelled.

2. That all invertebrate fauna, other than invertebrate fauna of the species described in the First Schedule hereunder and in the Second Schedule hereunder, shall not be protected fauna throughout the whole of the State.

3. A person shall not take any invertebrate fauna of the species described in the First Schedule hereunder unless that fauna is taken in accordance with the Wildlife Conservation Act 1950.

4. A person shall not take any invertebrate fauna of the species described in the Second Schedule hereunder unless that fauna if taken in accordance with -

   (a) the Wildlife Conservation Act 1950;

   (b) the Fisheries Act 1905; and

   (c) any classification of the whole or any part of any marine nature reserve, marine Park or other marine reserve, where such a classification has been made pursuant to section 62 of the Conservation and Land Management Act 1984 to provide for the objects and purposes of section 13 of that Act.

BARRY HODGE
Minister for Conservation
and Land Management

FIRST SCHEDULE

Jewel beetles of the family *Buprestidae*..
Ants of the genus known as *Nothomyrmecia*.

Second Schedule

Invertebrate fauna within any marine nature reserve, marine Park or their marine reserve where the terms marine nature reserve, marine Park and marine reserve have the description and meaning ascribed to those terms in and for the purposes of the Conservation and Land Management Act 1984.

[Extract from Government Gazette No 116, 11 December 1987

0807 0690 500