

INTERIM GUIDELINES

CARNAC ISLAND NATURE RESERVE

FEBRUARY 1990



## PREFACE

In the absence of a formal Management Plan the Interim Guide-lines for Carnac Island Nature Reserve are intended to provide a basis for the annual works programme and other necessary operations required for the protection of persons, property and the flora, fauna and other conservation values in and around the Reserve.

A major revision will be held at 3 years from the date of acceptance of these Guide-lines unless preceded by an endorsed management plan.

The Interim Guide-lines will be reviewed and updated annually as further information becomes available. The annual works programme that emanates from these Interim Guide-lines will be approved by the Manager - Metropolitan Region.

## ACKNOWLEDGEMENTS

The original draft of these Guide-lines was prepared by Ms M Langley. The final draft was prepared by Mr G Graham (Planning Officer - Metropolitan) following input by Research Division, Fire Protection, Environmental Protection, Enforcement, Landscape and Recreation, and Planning Branch.

Particular input from Regional staff included Mr D Haswell (Manager - Metropolitan ), Mr G Pobar (Marine and Islands Manager - Metropolitan), Mr R Allison (Marine Ranger - Marmion Marine Park).

INDEX
-------

## PART I

1.0	DESCRIPTION	PAGE
1.1	PHYSICAL FEATURES -----	3
1.2	BIOLOGICAL FEATURES -----	3
1.3	EXISTING USE -----	5
1.5	MAP -----	AFTER 5

## PART II

2.0	OBJECTIVES AND STRATEGIES -----	6
2.1	PRIMARY MANAGEMENT AIMS -- -----	6
2.2	CONSERVATION -----	7 (9)
2.3	FIRE -----	11 (12)
2.4	UNDESIRABLE PLANT SPECIES -----	14 (15)
2.5	FERAL ANIMALS -----	16 (17)
2.6	OIL SPILLS -----	18 (19)
2.7	PLANT PATHOGENS -----	20 (21)
2.8	RARE AND ENDANGERED SPECIES -----	22 (23)
2.9	RECREATION -----	24 (25)
2.10	COMMERCIAL ACTIVITIES -----	27 (28)
2.11	LITTER -----	29 (30)
2.12	PUBLIC EDUCATION -----	31 (32)
2.13	GENERAL SAFETY -----	33 (34)
2.14	SIGNS -----	35 (36)
2.15	MAPS -----	AFTER 36

## APPENDIX

EUROPEAN HISTORY -----	37
------------------------	----

\*NB: Page numbers in brackets show reference for required action programme.

PART I	
1.0	DESCRIPTION

### 1.1 PHYSICAL FEATURES

NAME: CARNAC ISLAND NATURE RESERVE

STATUS: A CLASS RESERVE (No 26646) LOCATION NUMBER 2001

PURPOSE: RECREATION AND CONSERVATION OF FAUNA

LOCATION AND PHYSICAL FEATURES: Situated about 4km north of Garden Island and 8km west of Woodman Point. Carnac Island has an area of 17.2ha and a maximum elevation of 20m.

All land masses including reefs and a few off-shore stacks and islets are composed of calcareous sandstone. The main island is an undulating plateau which is covered to varying depths by sand. The most significant interruption in the surrounding cliffs is an approximately 250m long beach on the central eastern edge. This beach is subject to erosion and replacement on an annual seasonal basis.

Annual rainfall is about 800mm and falls mostly between late April and October. No surface fresh water occurs on the island, although in the past, wells have been dug on the island.

### 1.2 BIOLOGICAL FEATURES

#### FAUNA:

The most conspicuous fauna of the island consists of sea-birds, sea-lions, tiger snakes and king skinks.

#### BIRDS:

Thirty three species of birds have been recorded for Carnac Island with at least eight of those noted breeding on the island. Two species of particular interest are the little penguin (Eudyptula minor) and the wedge-tailed shearwater (Puffinus pacificus) with Carnac Island representing the most northern limit and southern limit of their respective breeding ranges. Also of note are the silver gull (Larus novaehollandiae) breeding population, which was recorded in 1981 as the second largest colony in Western Australia, and the pied cormorant (Phalacrocorax varius),

large nesting colonies of which are regularly established on the island or on adjacent islets.

#### MAMMALS:

Carnac Island generally attracts the largest numbers of Australian sea-lions (Neophoca cinerea) of any island in the Perth Metropolitan Region. There are records of up to 45 individuals at one time. Sea-lions usually occupy the eastern beach although at times they may move into the vegetation immediately adjacent to this beach. Current research indicates that sea-lions are present on the island all year round with numbers varying cyclically over an approximate 18 month period. Reduction in numbers are believed to be due to migration north for breeding.

The introduced house mouse (Mus musculus) occurs on the island and a population of rabbits (Oryctolagus cuniculus) was eradicated in 1969.

#### REPTILES:

There is a population of tiger snakes (Notechis scutatus) on the island which are known to feed on house mice and the young of nesting sea-birds. (Silver gull and tern chicks have been recovered from the stomachs of tiger snakes.)

King skinks (Egernia kingii) on Carnac Island are an important predator of silver gulls' eggs and the injury markings on tiger snakes indicate that there is regular confrontation between the two species.

#### FLORA:

Trees are absent from Carnac Island and the vegetation structures are predominantly shrubs in closed-shrub formations. Nine different plant communities have been identified with bird colonies thought to have a significant influence on the formation of some associations. Ninety seven plant species were recorded on the island in 1975 including fifty three introduced species.

### 1.3 EXISTING USE

Carnac Island provides a sheltered and popular natural anchorage which is used extensively during holiday periods and on weekends. From late spring through to early autumn it is common for thirty or more marine craft to be moored or beached along the island's shoreline with many people landing on the easily accessed eastern beach. During two separate long weekends in 1988, visitor counts at the island were 100 and 200+ at single counts.

A special attraction to the beach is the presence of often docile sea-lions. This provides a unique experience for visitors.

The reefs surrounding the island are particularly scenic for diving and snorkelling and the convenient anchorage provided by the island makes the reefs very accessible for enthusiasts.

Recreation on the reserve usually occurs in conjunction with water oriented activities such as boating, snorkelling, swimming and fishing.

Carnac Island is one of the closest significant sea-bird islands to the Perth Metropolitan Area, providing a year round opportunity for amateur and professional ornithologists to observe roosting and breeding bird colonies.

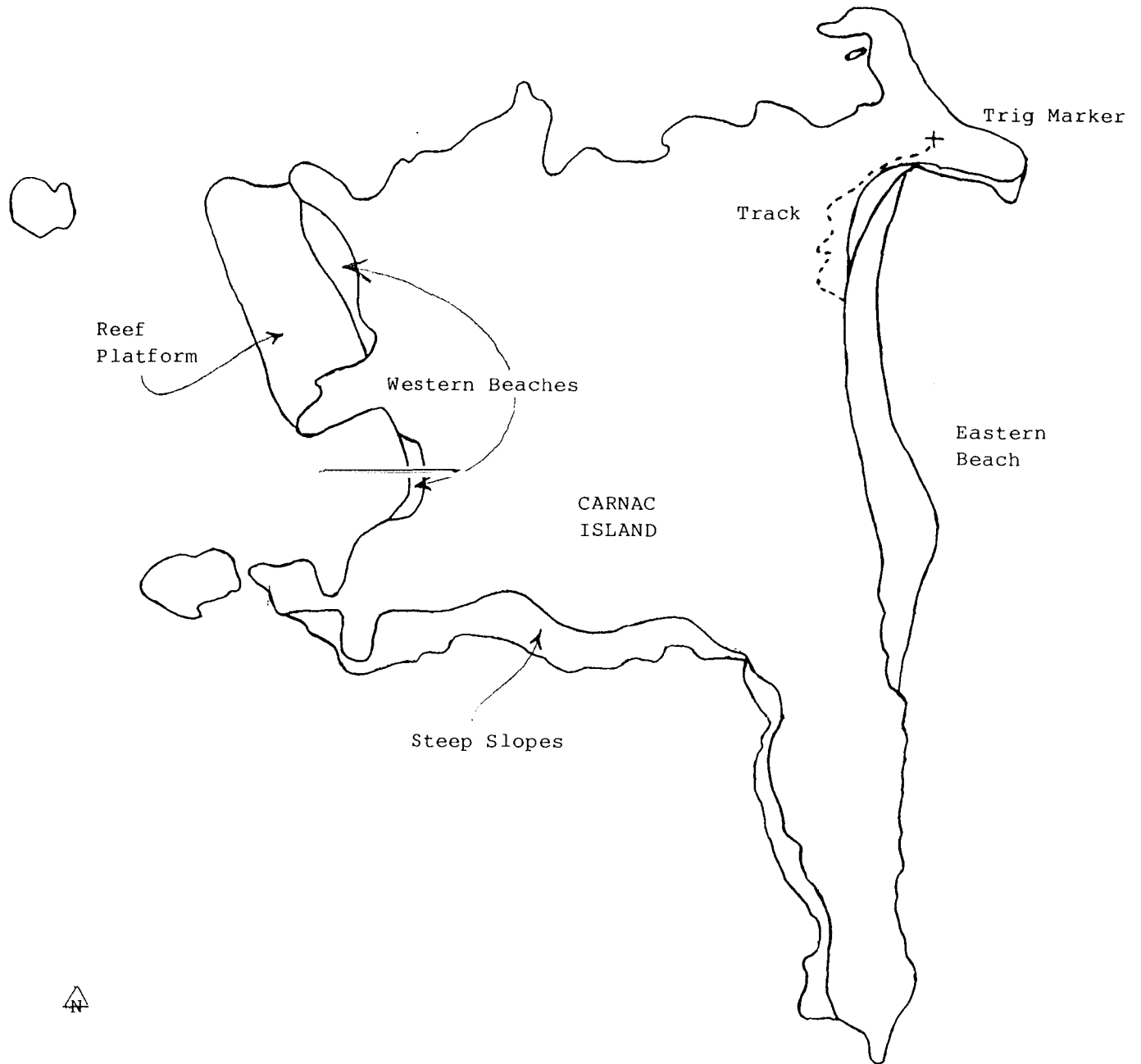
The breeding of the wedge-tailed shearwater and the little penguin on Carnac Island is of particular scientific interest as this represents the only overlap of the breeding ranges of these two birds known in Australia.

There is scientific interest in the population of silver gulls which breed on the island and are well known scavengers in Perth and suburban rubbish disposal sites.

The tiger snakes have been used in scientific research into venoms and as a small isolated population are valuable along with the king skink, for research into reptilian ecology and adaptation.

The reefs surrounding the island reserve vary considerably in their exposure to waves and thus are valuable for the study of intertidal ecology for the region.

CARNAC ISLAND NATURE RESERVE



SCALE: 0 150 METRES

PART II	
2.0	<u>OBJECTIVES AND STRATEGIES</u>

2.1 PRIMARY MANAGEMENT OBJECTIVES

- \* Conservation of the natural flora, fauna, soil and landscape values.
- \* Promotion (on site) of the recreational opportunities provided by the island.
- \* Promotion of safety awareness whilst recreating on the island.
- \* Promotion of the need to take care of a fragile environment.
- \* Promote and support research on the island's environment and that of surrounding waters.



## 2.2 CONSERVATION

The fauna of the island is supported by the vegetation, soil and landscape through provision of nesting material, nest sites shelter and food. Conservation of flora in all areas is important in order to ensure natural revegetation of nesting areas and areas of erosion from wind and wave action and through human activity. Soil and land conservation is an integral part of maintaining this isolated reserve.

### 1. TIGER SNAKES

Visitors to the island need to be wary of potential risk from venomous tiger snakes.

### 2. SEA LIONS

Both sea-lions and people favour the central eastern beach when onshore and generally both groups co-occupy with minimal disturbance to one another. There is concern over the types and level of people/sea-lion interaction. Conflict could occur between sea-lions and recreational users of the island. There have been reports of people being chased, and in at least one instance bitten, by sea-lions.

Reports by CALM Wildlife Officers show that when large numbers of boats and people visit the island during spring and summer sea-lion access to their traditional haul out beach has sometimes been restricted. This situation requires some action to ensure use of the reserve by sea-lions is not compromised.

### 3. NESTING BIRDS

People visiting the island have the potential to disturb nesting birds.

Ignorance about the effects on young birds if they or their parents are disturbed, can have a major impact on the breeding success of a variety of sea-bird species. Juvenile pied cormorants are easily frightened off cliff rookeries, they then become vulnerable to starvation, drowning or attack by predators. For some species, notably terns, parents tending young are easily frightened from the nests and are slow to return, this leaves young vulnerable to attack by predators. Abandonment of the whole nest site is also a risk when disturbance occurs.

The reactions of some species to low levels of disturbance means that even the occasional "off-season" visitor has the capacity to risk the breeding populations.

Many of the birds that breed on the island use burrows or nests under vegetation. Visitors walking through vegetation could damage nests or injure young.

#### 4. WEED INVASION

The pied cormorants on Carnac Island regularly establish new rookery sites as the result of destruction of the nesting vegetation because of trampling by birds and guano deposition. It is of concern that rookery sites could decrease if encroachment by plants unsuitable for nesting occurs in regenerating areas.

#### 5. AIRCRAFT

Overseas information indicates that regular close approach to sea-bird rookeries by helicopter can result in chick abandonment.

#### 6. EROSION

In 1982 it was recognised that the slopes, at the northern end of the eastern beach, were vulnerable to erosion caused by the trekking of people up to the trig. survey marker situated on the cliff above. The little penguin also uses these slopes for access to nesting burrows. This resulted in the action of the slopes being fenced off and the construction of a pathway to the trig. survey marker.

#### 7. FISH STOCKS

Concern has been expressed by CALM Officers who have observed that many reef fish previously abundant are now much reduced in numbers.

#### Objective

To ensure the conservation of the natural fauna, flora, soil and landscape values.

## PROGRAMME: CONSERVATION OF FAUNA

ACTIONS	ACTION BY
1. Review and upgrade signs as necessary relating to requirements of the Wildlife Conservation Act.	IMM MIM OM
2. Establish signs providing information on fauna to encourage visitor co-operation in fauna protection	IMM
3. Monitor (via officer visits) the fauna of the island in order to: i) predict conflicts between high recreational use and peak sea-lion use of the island ii) assess interaction effects of recreation iii) assess revegetation progress in sea-bird rookeries	MIM SWO
4. Encourage research on the fauna of the island with one aim being to contribute to the expectations of 3.	MIM PM
5. Establish signs to redirect visitors away from erosion areas	MIM OM

- |    |   |           |
|----|---|-----------|
| 6. | Monitor known and potential erosion sites:                      | MIM<br>PM |
|    | i) slopes along eastern beach                                   |           |
|    | ii) slopes along western accesses                               |           |
|    | iii) bird rookeries   |           |
|    | iv) swales leading from the beach to the interior of the island |           |
|    | v) frontal dunes eroded during winter storms                    |           |
| 7. | Undertake appropriate action dependant on the outcome of 7.     | MIM<br>OM |

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## 2.3. FIRE

### 1. HISTORY

There has been no record of fire on the Island since 1969 when a portion of the island's vegetation was burned as part of a rabbit eradication programme. Recollections of an officer involved in the programme is that there was little fuel available on the island because of heavy grazing by rabbits. The current situation may be very different with dense vegetation now present over most of the island.

No other fire history for the island has been noted. The major fire risk for the reserve is from illegally lit fires i.e. Beach camp fires.

### 2. PRIORITIES

In the event of fires occurring on the island, priority for protection will be:

- \* Human Life
- \* Property
- \* Flora, fauna and landscape values.

### OBJECTIVE

To ensure that fire management takes account of the protection of human life, property and conservation values, in that order of priority.

### REFERENCE

- \* Regional Fire Control Working Plan, Metropolitan Region



## PROGRAMME: PRE-FIRE

ACTIONS	ACTION BY
1. Incorporate each action on completion into the Regional Fire Control Working Plan.	RO
2. Review procedure for response to notification of fire.	OM
3. Review liaison requirements, procedures and contacts. (Inter-agency agreements.)	OM
4. Compile an inventory of fire suppression resources available or required to be stored at Woodman Point.	RO
5. Initiate public education through signs, pamphlets, and officer contact with the public.	IMM
6. Open fires including barbecues will not be allowed on the island.	N/A

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## PROGRAMME: FIRE SUPPRESSION

ACTIONS	ACTION BY
1. Temporary arrangements in force until pre-fire programme completed at which time fire suppression action will follow Regional Fire Control Working Plan.	N/A
2. Temporary arrangements are:	
i) CALM staff to be dispatched (possibly by helicopter to ensure protection of human lives.	On-call Officer
ii) Transport fire suppression equipment and CALM staff to the island by boat if conditions are suitable.	Fire Boss MIM
iii) Mop-up to be complete.	Fire Boss

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

#### 2.4. UNDESIRABLE PLANT SPECIES

A number of introduced species are established on the island.

'Undesirable' status of a species will be determined using CALM Policy Statements, the Agriculture Protection Board 'Declared Plant Control Handbook 1987', Calm lists of non-declared species of weeds of ecological significance , and discussions with appropriate CALM staff.

Regeneration in cormorant rookeries and erosion in silvergull nesting areas may result in the encroachment of weeds into these areas. The effect of such a change in the vegetation on the re-use of these areas by breeding birds needs to be assessed.

#### Objective

To achieve systematic and safe control of undesirable plant species within the reserve and to take preventative measures to avoid the introduction of weed species.

#### REFERENCES

- \* Weeds on CALM Land Policy Statement 14
- \* Rehabilitation of Disturbed Land Policy Statement 10

PROGRAMME: MANAGEMENT OF UNDESIRABLE PLANT  
SPECIES

ACTIONS	ACTION BY
1. Prepare plans showing biological and physical features of Carnac Island to allow plant sampling according to: i) sea-bird breeding areas. ii) potential erosion areas.	PM
2. Prepare distribution maps of undesirable plants including species, distribution and density.	PM MIM
3. Establish criteria for eradication and control.	MIM OM
4. Prepare undesirable plant management programme	MIM OM
5. Undertake undesirable plant management programmes.	OM
6. Monitor effects of introduced plant species and management impact.	MIM PM
7. Review efficiency of techniques.	Regional Leader Group

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## 2.5. FERAL ANIMALS

### 1. RABBITS

A population of rabbits had caused serious damage to vegetation and created erosion problems on the island by 1969. A rabbit eradication programme was successful.

### 2. MICE

The population of house mice reaches large numbers during spring and autumn, (this does require research verification) however control measures are not proposed at present for the following reasons:

- \* The population naturally declines markedly during summer and winter.
- \* The population is isolated.
- \* Detrimental effects of the house mouse on the islands' environment are unknown.

### OBJECTIVE

To prevent the introduction of feral animals to the reserve and achieve safe control of the abundance of feral animals within the reserve.



## PROGRAMME: FERAL ANIMALS

ACTIONS	ACTION BY
1. Investigate the need for a research programme on the house mouse and its influence on the tiger snake population and island ecology	PM
2. Subsequent to the outcome of 1; review the need for house mice control.	OM

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## 2.6. OIL SPILLS

### 1. PROXIMITY TO SHIPPING

A major shipping channel has been dredged approximately 3km east of Carnac Island thus providing some concern about the vulnerability of this island to oil spills and pollution by discharge from shipping.

### 2. IMPACT ON FAUNA

Records show that penguins on Carnac Island have been affected by oil spill events. Little penguins with oil slicked plumage have suffered hypothermia which resulted in pneumonia and death in many cases. Information suggests that sea-lions are also vulnerable to oil contamination.

Incidents of oil spillage have affected Cockburn Sound in the past and there is the potential for the contamination of the marine fauna that use the island while they are at sea.

### Objective

To minimise damage to the island and its wildlife in the event of a contaminant spill.

### REFERENCES

- \* Metropolitan Region Oil Spill Contingency Plan
- \* State Counter Disaster Plan

## PROGRAMME: OIL SPILL

ACTIONS	ACTION BY
1. Review procedures for response to notification of an oil spill likely to affect Carnac Island.	OM
2. Review liaison requirements, procedures and contacts. (Inter-agency agreements)	OM
3. Incorporate procedures into Metropolitan Region Oil Spill Contingency Plan.	OM
4. In the event of a spill; a) undertake action as per the Metropolitan Region Oil Spill Contingency Plan.  b) assist in the co-ordination of rescue, care and rehabilitation of contaminated wildlife.  c) clean-up foreshore environment and if possible the off-shore environment.	N/A

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## 2.7. PLANT PATHOGENS

Current knowledge indicates that no plant pathogens of significance are present on the island.

### Objective

To prevent the introduction and spread of plant pathogens (such as dieback).

### REFERENCES

- \* CALM Dieback Hygiene Manual - 1986

## PROGRAMME: PLANT PATHOGENS

ACTIONS	ACTION BY
1. Undertake regular monitoring of the patterns of vegetation distribution on the island and in the event of changes in the vegetation (such as extensive plant death) ensure that the possibility of plant pathogens are taken into consideration.	PM

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer



## 2.8. RARE AND ENDANGERED SPECIES

### 1. FAUNA

At present the only species present on the island which is proclaimed under the Wildlife Conservation Act (1950) is the Australian sea-lion (Neophoca cinerea). This animal is recorded under Schedule 2 of the proclamation which designates that it is a species 'which is otherwise in need of special protection'.

### 2. FLORA

No declared rare flora has been recorded.

### Objective

To record and protect species of rare flora and fauna and their habitat.

## PROGRAMME: RARE AND ENDANGERED SPECIES

ACTIONS	ACTION BY
1. Record the presence and distribution of rare flora and fauna	PM MIM
2. 1. is to include those species which use the island in a transitory manner.	N/A
3. Investigate all avenues leading to the protection of the species and habitat of the designated species.	PM MIM
4. Implement a cost effective programme subsequent to the outcome of 3.	OM MIM

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## 2.9 RECREATION

### 1. TIME OF VISITS

Visits to the island by the public occur mainly during weekends and holiday periods while fine weather prevails.

### 2. ACCESS

Most people access the island via the central western beach and most usually stay on this beach because of the presence of tiger snakes on the island.

### 3. ACTIVITIES

Some people explore the coast of the island walking along the top of the cliffs, past and through various bird nesting areas or climb up to the trig. survey marker above Currie Point at the northern end of the island.

Generally speaking though activities are usually associated with recreation in adjacent waters, for example boating, fishing, swimming and snorkelling or diving.

### 4. FACILITIES

At present a walk track provides access to the trig. survey marker at the north eastern corner of the island as it is a high spot which allows for spectacular views.

No other user facilities are available

### 5. SAFETY

Apart from aggressive sea-lions, the main safety concerns are tiger snakes, undercut cliff edges and an unlocated well.

### Objectives

To encourage responsible and enjoyable interaction with the natural environment.

To protect conservation values from damage by undesirable activities and promote an awareness of personal safety while interacting with the natural environment.

### REFERENCES

- \* Recreation in Nature Reserves Policy Statement 7

## PROGRAMME: PROMOTION OF ISLAND RESOURCES

ACTIONS	ACTION BY
1. Allow for the continuance of existing acceptable activities in a safe manner and minimise the effects on the environment.	N/A
2. Provide guide-lines for safe interaction between visitors and sea-lions through an information shelter.	MIM IMM
3. Provide information on the values of the island	IMM

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## PROGRAMME: VISITOR USE AND RECORDS

ACTIONS	ACTION BY
1. Undertake a Vistat programme.	IMM
2. Collect visitor activity information through informal recording of activities by CALM staff on a regular basis.	MIM IMM
3. Monitor visitor response to management techniques employed on the island.	MIM

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## 2.10 COMMERCIAL ACTIVITIES

There are currently commercial groups who use the island mainly as a result of undertaking marine orientated activities such as diving and fishing. There have been charter vessels anchoring adjacent to the island which cater for tourist groups.

Given the increasing level of interest in the marine and island environments by commercial operators it is important that a consistent management response is established.

### Objectives

Ensure that any commercial operations that use the island do not impact upon its environmental attributes or the enjoyment of the island by the general public.

## PROGRAMME: COMMERCIAL ACTIVITY

ACTIONS	ACTION BY
1. Commercial group visits will not be encouraged or facilitated.	N/A
2. Undertake a monitoring programme to assess current use.	MIM PM
3. Advise Policy Directorate of current and predicted use and request advice on appropriate courses of action.	RM

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

#### 2.11. LITTER

Litter is a problem where people recreate and many people picnic on the beach at Carnac Island.

##### Objective

Encourage island visitors to take rubbish materials away with them.



## PROGRAMME: LITTER CONTROL

ACTIONS	ACTION BY
1. No litter bins will be supplied on the island.	N/A
2. The information shelter will include a request to remove rubbish from the island.	IMM
3 Officers visiting the island will remove litter.	N/A

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## 2.12. PUBLIC EDUCATION

### 1. ENVIRONMENTAL CARE AND SAFETY

Signs currently provide information on the hazard of tiger snakes on the island. This is usually a deterrent to visitors entering shrub areas. It is proposed to provide more information to assist visitors who do explore the island in the care needed when entering sea-bird or sea-lion areas.

#### Objectives

To provide on-site information about natural resource values.

To encourage appreciation of near metropolitan area island environments.

To promote CALM island management strategies.

To encourage behaviour and attitudes conducive to conservation of flora and fauna.

#### REFERENCES

- \* Community Education and Interpretation Policy Statement 25.

## PROGRAMME: PUBLIC EDUCATION

ACTIONS	ACTION BY
1. Produce a brochure on Carnac Island and island management in general.	IMM
2. Contact user groups.	MIM
3. Place a low key information shelter on the island.	IMM OM
4. Investigate possible pre-season use of the media for publicising information important to island visitation.	IMM

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## 2.13. GENERAL SAFETY

### 1. AIRCRAFT

The proposed use of helicopter transport to the island has been raised in the past for emergencies and other uses. It should be noted that the large numbers of birds on the island (in excess of 8000 silver gulls alone have been estimated in the past) presents a hazard to helicopter approach.

### 2. CLIFFS

There is a potential risk form undercut travertine cliff tops which have in the past broken away.

### 3. WELL

An well on the island may by in a dangerous condition especially as vegetation is dense and this would mask its existence to people walking over the island. Its location is currently unknown

## PROGRAMME: SAFETY

ACTIONS	ACTION BY
1. Address tiger snake and cliff edge hazard warnings in signs programme section	IMM
2. Undertake programmed officer visits for visitor contact and guidance.	MIM
3. Liaison between Metropolitan Region and Wildlife Protection Branch on visitor safety and inspection periods.	MIM SWO
4. Locate the well and ensure that it is in a safe condition.	MIM OM
5. Assess any proposed operation involving aircraft approach to and/or landing on the island and safety of aircraft occupants with a view to restricting such operations to emergencies only.	MIM OM
6. Review the maintenance, re-alignment, up-grading, or removal of the pathway to trig. survey marker, north eastern end in line with safety aspects.	IMM
7. Review safety programme.	Regional Leader Group

RM = Regional Manager  
 MIM = Marine and Islands Manager  
 PM = Planning Manager  
 IMM = Interpretation and Marketing Manager  
 OM = Operations Manager  
 RO = Reserves Officer  
 SWO = Supervising Wildlife Officer

## 2.14. SIGNS

### 1. ROLE OF SIGNS

Signs on the island are needed to support conservation, protection and safety objectives. This includes signs pertaining to the Wildlife Conservation Act, safety hazards, erosion control and biological information.

### 2. BARRIER FENCE

Since the installation of a barrier fence at the northern end of the eastern beach revegetation of slopes has been good. The barrier fence however, is subject to destruction during severe winter storms and often requires repair.

### Objective

To provide for high quality signs to support the objectives of conservation, recreation and education.

### REFERENCES

- \* Community Education and Interpretation Policy Statement 25
- \* CALM Sign Manual 1988

## PROGRAMME: SIGNS

ACTIONS	ACTION BY
1. Provide information on: i) Sea-lion biology and usage of the island; ensuring access, egress and safety in the water. ii) Sea-bird biology and sensitivity to disturbance	MIM IMM
2. Provide a series of signs on important requirements to protect the island environment: i) No camping ii) No fires iii) No pets iv) No entry to erosion areas.	MIM IMM
3. Replace the fence with totems indicating message 2 (iv).	MIM OM
4. Provide signs on: i) Location of information shelter ii) Carnac Island Nature Reserve iii) Location of walk trail	MIM IMM OM
5. Provide information on safety issues: i) Interacting with sea-lions (Information Shelter) ii) Tiger snakes and cliff edges (Information Shelter) iii) Rubbish Removal (Information Shelter) iv) Signs on tiger snakes hazards around the island v) Totems on cliff edge hazard	IMM
6. Review effectiveness of signs.	MIM IMM
7. Maintain signs to a high standard.	OM
RM = Regional Manager MIM = Marine and Islands Manager PM = Planning Manager IMM = Interpretation and Marketing Manager OM = Operations Manager	

## APPENDIX

EUROPEAN HISTORY

The island was named Bertholet in 1801 by French explorers from the vessel 'Naturaliste'. Captain James Stirling renamed it in 1827 as Carnac Island after his first lieutenant John Rivett Carnac.

To twenty nine of the first settlers to arrive in the Swan River colony Carnac Island provided an unceremonious welcome. They were landed on the island in order to lighten the 'Parmelia' after the ship was unfortunately run aground on the sand bar between Carnac Island and Woodman Point. At the time the Parmelia was under the command of Lieutenant-Governor James Stirling who had investigated these passages in 1827. The settlers were camped on Carnac Island for 5 days before being taken to Garden Island.

In 1832, three Aborigines including Yagan were imprisoned on Carnac Island in the care of Mr R.M. Lyon and a number of soldiers. It seems this settlement lasted less than a month. The prisoners escaped with a Government stores boat that was forced to stay overnight, presumably because of bad weather. During their short time on the island Mr Lyon attempted to learn about the Aborigines' life and culture and in 1833 he published a vocabulary of Aboriginal words including the name for Carnac Island, which was NGOOLOORMAYUP.

The first two whaling enterprises in Perth waters were established in 1836/1837, one based on Carnac Island became known as the Carnac Whaling Station or the Perth Whaling Station of the Northern Fisheries Companies.

In establishing the Carnac Island Whaling Station, Perth's first church was bought and transferred to the Island to serve as a store.

The whaling station had a fairly short and unfortunate life with the loss of lives, damage to boats and robbery of much of their supplies.

Well hidden by dense vegetation on the island are the remains of limestone footings of a building, a well and possibly an incinerator or fire pot. All these are still evident on aerial photographs of 1944.

In 1884 the State Government gazetted Carnac Island as a Quarantine Station for vessels, persons and other things liable to quarantine in the Port of Fremantle. Attention was recalled to this proclamation in 1892 and plans for quarantine station buildings were prepared. In 1898 topographic site survey of the quarantine station indicates three buildings on the island that appear somewhat simpler than those of the 1892 plan.



The Commonwealth Government acquired the island down to low water mark in 1916 for defence purposes and in 1944 apparently proposed to establish a camp on the island.

In 1961 the Commonwealth transferred the island back to the State. In 1963 it was set apart as an A class reserve, number 26646 and was controlled by the Minister for Lands.

Vesting in the Fauna Protection Advisory Committee occurred in 1967. In 1972 the name Carnac Island Wildlife Sanctuary was applied with this being changed to Carnac Island Nature Reserve in 1979.

G Graham  
Planning Officer - Metropolitan  
3 February 1990

CARNAC ISLAND NATURE RESERVE

EXAMPLE OF BIRD USE

