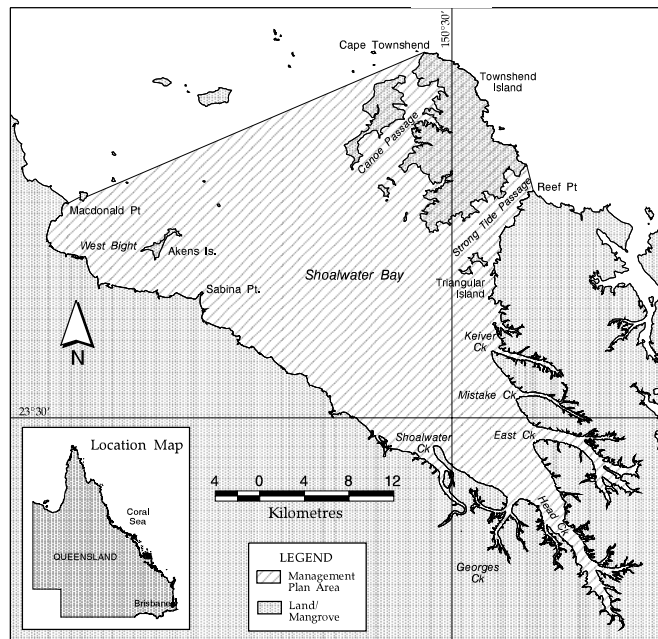


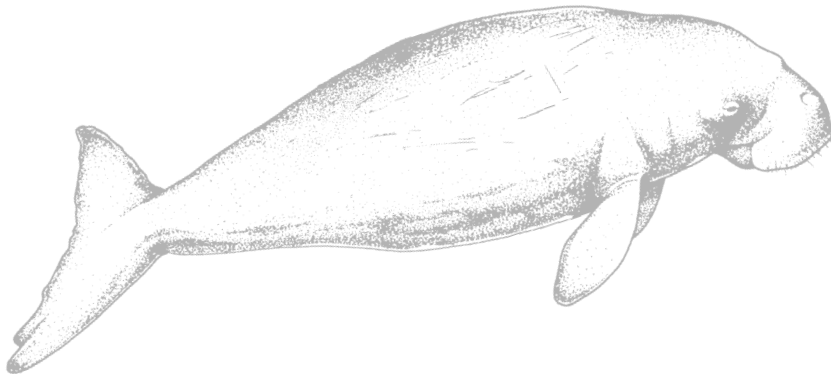
# SHOALWATER BAY (Dugong) PLAN OF MANAGEMENT



**GREAT BARRIER REEF**  
MARINE PARK AUTHORITY



# **SHOALWATER BAY (Dugong) PLAN OF MANAGEMENT**



**GREAT BARRIER REEF**  
MARINE PARK AUTHORITY

© Great Barrier Reef Marine Park Authority 1997

ISBN 0 642 23035 0.

First published in 1996

Published by the Great Barrier Reef Marine Park Authority March 1997

**National Library of Australia Cataloguing-in-Publication Data:**

Shoalwater Bay (Dugong) plan of management.

ISBN 0 642 23035 0.

1. Dugong - Queensland - Shoalwater Bay. 2. National parks and reserves - Queensland - Management. 3. Shoalwater Bay (Qld.). I. Great Barrier Reef Marine Park Authority (Australia).

333.959559

**ACKNOWLEDGMENTS**

This plan was prepared by Janet Slater and Tony Stokes of the Great Barrier Reef Marine Park Authority.

The Authority is grateful for comments from many people who have contributed to the plan. These include Professor Helene Marsh, Dr Anthony Preen, Dr Peter Corkeron (JCU); Jim Edwards (Defence); Rick Exten (QDPI Boating and Fisheries Patrol); Dr Robert Coles, Warren Lee Long (QDPI Northern Fisheries); Pat Appleton (QFMA); Paul O'Neil, Graham Bryon, Andrew Page, Doug Crossman, Jeremy Thompson, Greg Carter and David Orgill (QDoE); Colin Bishop (QCFO); Doug Hatfield, David Hatfield (Darumbal-Noolar Murree Aboriginal Corporation for Land and Culture); Wildlife Preservation Society of Queensland (Capricorn Branch); and Harry Dunstall, Mary Toohey and Claire Parkhill (Office of Legislative Drafting - Attorney Generals Department).



**GREAT BARRIER REEF**

MARINE PARK AUTHORITY

PO Box 1379

Townsville Qld 4810

Telephone: (077) 500 700

Facsimile: (077) 726 093

## **How to read this Plan of Management**

This Plan has two parts: the **Preface** and the **Table of Provisions**.

- The **Preface** introduces the reader to life history and biological information about dugongs, and presents actions for the recovery of the species in Shoalwater Bay.
- The **Table of Provisions** sets out the legal provisions which are enforced under the *Great Barrier Reef Marine Park Act 1975* and Regulations.

Commonwealth of Australia

Great Barrier Reef Marine Park Act 1975

# Shoalwater Bay (Dugong) Plan of Management

SB01/97

## C O N T E N T S

### P R E F A C E

Clause	Page
--------	------

#### PART 1 INFORMATION ABOUT DUGONG

##### *Division 1—General*

1.1	Description	iii
1.2	Distribution	iii
1.3	Habitat	iii
1.4	Diet	iv
1.5	Behaviour	iv
1.6	Reproduction	v
1.7	Population estimates	v
1.8	Reasons for concern about dugong numbers in the Marine Park	v

##### *Division 2—Dugongs in Shoalwater Bay*

1.9	Location and description	v
1.10	Distribution of dugongs in the Area	vi
1.11	Human use of the Area	vi

#### PART 2 MANAGEMENT RESPONSES TO THREATS

##### *Division 1—Introductory*

2.1	Introduction	vii
-----	--------------	-----

##### *Division 2—Commercial fishing threats*

2.2	Mesh netting—general	vii
2.3	Mesh netting in the Area	vii
2.4	River set mesh nets	viii
2.5	Management response	viii

##### *Division 3—Defence threats*

2.6	Interpretation	viii
-----	----------------	------

Clause	Page
2.7 Introduction	ix
2.8 Underwater demolition training	ix
2.9 Procedures for detonation	ix
2.10 Mine disposal	ix
2.11 Effects of underwater explosions on marine life	ix
2.12 Use of explosives as wildlife deterrents	xi
2.13 Impacts on seagrass meadows	xi
2.14 Management response	xi

#### *Division 4—Indigenous threats*

2.15 Traditional hunting and gathering	xi
2.16 Management response	xii

#### *Division 5—Threats from the use of vessels*

2.17 Collisions with vessels	xii
2.18 Management response	xii

### **PART 3 RESEARCH**

3.1 Introduction	xiii
3.2 Proposed research programs	xiii

## **TABLE OF PROVISIONS**

### Provision

#### **PART 1 PRELIMINARY**

1. Citation	2
2. Interpretation	2

#### **PART 2 MANAGEMENT ISSUES**

3. Endangered species—dugong	4
4. Management of use	4

#### **PART 3 RELEVANT PERMISSIONS**

5. Collecting dugong	5
----------------------	---

#### **PART 4 ENFORCEMENT PROVISIONS**

6. Restrictions on the use of nets in the Area	5
7. Collecting dugongs	6
8. Interference with dugongs	6

### **SCHEDULE**

Shoalwater Bay area	7
Map of area	8

# P R E F A C E

## RECOVERY PLAN FOR DUGONGS IN SHOALWATER BAY

### PART 1 INFORMATION ABOUT DUGONGS

#### *Division 1—General*

##### **1.1 Description**

The dugong, commonly known as the sea cow, is a plant eating (herbivorous) marine mammal belonging to the Order *Sirenia*. It is the only species remaining in the family *Dugongidae*. Its closest relative, Steller's sea cow, was hunted to extinction within 27 years of its discovery in 1741.

The dugong is rotund and spindle-shaped with smooth grey skin covered by sparse hair. The average adult weighs between 250-300 kilograms and measures 2.5 metres long. Dugongs have a dolphin-like tail used for propulsion, and rounded forelimbs. The head is broad with a large down-turned muzzle adapted for bottom feeding. Dugongs have molar teeth for grinding seagrass and males have two tusks. Nostrils at the top of the snout allow dugongs to breathe at the surface while minimising exposure of the body.

##### **1.2 Distribution**

Dugongs are found in tropical waters of 43 countries of the western Pacific and Indian Oceans. In Australia, they are found in the northern waters between Shark Bay in the west and Moreton Bay in south-east Queensland.

##### **1.3 Habitat**

Dugongs require seagrass meadows of particular species for feeding, as well

as places for resting, calving and transiting. They prefer areas that are sheltered from rough seas because of their need to surface often to breathe. Seagrass meadows occur in shallow coastal waters throughout the *Marine Park* and in some areas of deepwater (up to 30 metres) north of Cooktown. Dugongs tend to use regular routes to move between feeding meadows and resting places.

Recent satellite tracking studies of dugongs in the *Area* provide some data on the use of transiting habitat, and suggest that dugongs roam widely and frequently in the *Area* to access food.

Dugongs appear to select sheltered areas for calving to maximise protection against sharks and disturbance. Calving has been recorded on sandbars or in channels between them, and on sandy beaches adjacent to shallow, protected bays.

#### **1.4 Diet**

Dugongs feed predominantly on seagrasses and show a preference for species of the genera *Halophila* and *Halodule* which are “pioneer species” that are low in fibre and high in available nitrogen and digestibility. Dugong grazing promotes sparse meadows of nutritious pioneer species such as *Halophila ovalis* and has also been shown to promote prolific regeneration. An average adult consumes an estimated 25 kilograms a day. Marine algae is also consumed when seagrass is scarce. Studies have also found that dugongs consume species of macro-invertebrates, particularly ascidians (commonly known as sea squirts) in the southern part of their range (for example, in Moreton Bay).

#### **1.5 Behaviour**

Dugongs are recorded as feeding during the day and night. They tend to select areas close to deepwater to avoid stranding. Feeding involves a cycle of short dives (for up to 3 minutes) and surfacing for air (for 1 or 2 seconds). Dugongs are able to hold their breath only for a maximum of 8 minutes and will drown within that time if kept submerged. Their hearing is acute and they communicate by a variety of sounds including soft squeaks or chirps (1-8 kilohertz) and louder barking sounds (around 1200 hertz). The chirps and squeaks are associated with territorial behaviour and mother-calf bonding, and the barks with warding off intruders. Dugongs are slow moving and are capable of only short bursts of fast swimming. Although at times they form groups, they are mostly solitary, except for mothers and calves which stay together for up to 18 months. Dugongs live for about 70 years.



## **1.6 Reproduction**

Dugongs breed slowly, producing one calf every 3 to 7 years. Pregnancy lasts 13 months. Even under ideal conditions, a dugong population cannot increase by more than 5% a year.

## **1.7 Population estimates**

The Australian dugong population is estimated at 80,000. About 12,000 live in the *Marine Park* of which about 1,700 are found in the southern region of the Park.

## **1.8 Reasons for concern about dugong numbers in the Marine Park**

Dugongs are vulnerable to extinction because they have a low reproductive capability and live close to the shore where they are susceptible to human activities, for example, commercial netting (within the meaning of the *zoning plan*), *traditional hunting and gathering* and the use of *vessels*. A slight fall in adult numbers can cause a long-term decline in the population.

In the southern region of the *Marine Park*, the dugong population has declined from an estimated 3479 +/- 459 animals in 1987 to 1682 +/- 236 animals in 1994 (population estimate +/- standard error) making the species critically endangered in that region under standards set by the World Conservation Union. (A similar decline has occurred in the *Area* over the same period from an estimated 765 +/- 161 animals to 406 +/- 78 animals (population estimate +/- standard error)). Population models suggest that the sustainable loss of dugongs from human causes is around 1% of females a year.

### *Division 2—Dugongs in Shoalwater Bay*

## **1.9 Location and description**

Shoalwater Bay is a large estuarine area approximately 50 kilometres north of Rockhampton. 37% of the *Area* is shallow open water (less than 10 metres deep) supporting seagrass meadows, and 35% is mangrove communities. An extensive network of creeks and rivers drain into the *Area*, and a number of islands are scattered across the northern area.

The *Area* supports the most important dugong seagrass habitat in the southern region of the *Marine Park*, and the largest dugong population in the Park south of Cardwell. It is remote from human settlement.

### **1.10 Distribution of dugongs in the Area**

Recent satellite tracking research indicates that dugongs roam widely and frequently in the Area to gain access to the seagrass meadows of the inshore coast, rivers and creeks. The majority of seagrass meadows occur on intertidal banks at depths of between 0.5 and 8 metres. Most meadows are a mixture of *Halophila ovalis*, *Halodule uninervis* and *Zostera capricorni*, which are species favoured by dugongs. In the southern reaches of the Area, seagrass meadows tend to form narrow strips, while more extensive meadows are found in the northern reaches of the Area.

Important seagrass meadows are located from West Bight to south of Sabina Point, around Triangular and Akens Islands, in Canoe Passage and Strong Tide Passage and in rivers and creeks. A small area of subtidal seagrass meadows (at depths exceeding 15 metres) is located in Canoe Passage, and adjacent to the south-western corner of Townshend Island. These meadows may provide important feeding opportunities for dugongs during low and neap tides.

Port Clinton, an area to the east of the southern section of the Area that is not currently included within the boundaries of the *Marine Park*, also supports extensive seagrass meadows including species favoured by dugongs. Aerial surveys of the Area conducted since 1975 indicate that dugongs use Port Clinton, and recent tracking of dugongs fitted with satellite transmitters indicate that Port Clinton is one of several important feeding areas in the region for dugongs.

### **1.11 Human use of the Area**

The main human use of the Area is under naval training operations which commenced in 1965. Naval activities are permitted in the Area under the *zoning plan*.

Commercial fishing is the main non-defence use of the Area (although limited recreational fishing also occurs from base camps at Macdonald's Point and other mainland locations).

The Area is also of cultural significance to indigenous inhabitants as it is part of the territory of the Darumbal Aboriginal language group, which extends from the Styx River in the north to Raglan Creek in the south, and west to the Broad Sound-Boomer Range.

## **PART 2   MANAGEMENT RESPONSES TO THREATS**

### *Division 1—Introductory*

#### **2.1 Introduction**

Any unnatural dugong mortality in the *Area* is unsustainable. Management responses to the threats to dugong in the *Area* are set out below. The success of these actions will be monitored through surveillance, enforcement and research. If further dugong mortality occurs in the *Area*, and is shown, or is reasonably suspected, to be related to human activity, further action will be taken to remove the cause or causes.

### *Division 2—Commercial fishing threats*

#### **2.2 Mesh netting—general**

Mesh netting is a significant cause of injury and mortality to dugongs. Studies undertaken in Cleveland Bay show that dugongs are highly susceptible to becoming entangled in nets.

It is difficult to obtain data on dugong mortality in mesh nets in the *Marine Park* for a variety of reasons, some of which include remoteness, the tendency for fishers to set nets at night and the lack of resources and staff to adequately oversee netting practices.

Many of the nets used in the *Area* have large meshes which can easily catch a dugong by its tail or pectoral flippers. Mesh nets are also invisible to dugongs (and many other marine taxa) which do not possess sonar mechanisms to locate obstacles.

A dugong may die in a mesh net as a result of drowning or stress, or may be killed by a fisher to enable its removal from the net. The *Authority* is particularly concerned about the practices of cutting the tail off an entangled living dugong in order to remove it from a net, and sinking a dugong carcass by slitting its abdomen and removing its internal organs.

Studies show that dugongs are susceptible to death from the stress of becoming entangled in a net, and may subsequently die despite being released alive from the net. The rescue of entangled dugongs is also known to be difficult and mostly unsuccessful.

#### **2.3 Mesh netting in the *Area***

A number of kinds of mesh net are permitted in the *Area*, including river set

nets, drift nets, shark nets and ring nets. Potentially, these nets are a risk to dugongs wherever they are used because of the species' propensity to roam widely.

About 10 mesh net fishers are believed to regularly harvest blue salmon, shark, barramundi, mullet and grey mackerel in the *Area* as a supplement to their crab fishery. The number of occasional commercial or recreational fishers in the *Area* is unknown.

## **2.4 River set mesh nets**

An assessment of the threat of river set mesh nets to dugongs was undertaken by the *Authority* in 1996. The assessment determined that, by their design and deployment, river set mesh nets are able to entrap and drown dugongs in the same way as set foreshore and set offshore mesh nets.

River set mesh nets have a mesh size of 150-215 millimetres, a drop depth of 50 meshes and a permitted length of 120 metres. A licensed commercial fisher is permitted to use 3 nets at any particular time, and is required by law to remain in attendance (that is, within 800 metres) of the nets. The nets may not be set more than one nautical mile apart, and the upstream limit for their use is the top of the tidal influence or freshwater. The nets may be used throughout the year, except during the barramundi closure from November to January. River set mesh nets are placed from a bank to halfway across a river, usually one hour before high tide (about the time that dugongs move into creeks and rivers to feed).

Studies have found that dugongs use rivers and creeks flowing into the *Area* and it is considered that river set mesh nets are a risk to the species. These rivers and creeks are located outside the *Marine Park* and are managed by the Queensland Department of the Environment.

## **2.5 Management response**

The Shoalwater Bay (Dugong) Plan of Management has been prepared in response to mesh netting threats.

### *Division 3—Defence threats*

## **2.6 Interpretation**

In this Division:

“**Defence Area**” means the Shoalwater Bay Defence Area, as described in item 7 in the Schedule to the *zoning plan*.

## **2.7 Introduction**

The Royal Australian Navy conducts various exercises in the Area involving surface and underwater detonation of explosive charges, amphibious landings and naval gunfire support. Mine disposal training does not currently occur but may resume in the future. Operations occur in 3 regions: near Townshend Island, near Sabina Point and within a 2 kilometre radius of Triangular Island.

## **2.8 Underwater demolition training**

Underwater demolition training involves the detonation of a range of explosive charges (5 to 500 kilogram devices) during regular training sessions of several weeks duration each year. In the year to March 1996, the Royal Australian Navy Diving School undertook 4 training exercises. During each of these exercises up to 40 detonations occurred (100 to 500 kilogram devices). These exercises were conducted underwater mainly in the vicinity of Triangular Island, although some surface detonations were also conducted. The Navy maintains records of exercises conducted in the Defence Area.

## **2.9 Procedures for detonation**

At Triangular Island, explosive charges are set at low tide and detonated at high tide. Detonation must comply with special conditions relating to an Environmental Certificate of Compliance issued by the Department of Defence for the Defence Area.

If endangered species are detected, provision is made for either small explosive charges (0.5 kilogram devices) to be detonated in the water, or larger scare charges to be fired from the land, within 15 minutes of the planned detonation.

## **2.10 Mine disposal**

Mine countermeasure vessels of the Navy may need to use the Defence Area in the future if operations are relocated from near Townsville. A maximum of 8 charges (105 kilogram devices) are expected to be detonated each year at a depth of between 5 and 35 metres. Precautions before detonation will include an area search using a ship mine-hunter sonar that is capable of detecting marine mammals.

## **2.11 Effects of underwater explosions on marine life**

The use of explosives in the marine environment is potentially harmful to

both fish and marine mammals, and can cause dieback in some seagrass communities. Species of fur seals, sea lions, sea otters, turtles, manatees, whales and dolphins are recorded as having been killed or injured by the detonation of 5 kilogram explosive devices. There are no data on the impact of underwater explosions on dugongs in the *Marine Park*, but the *Authority* considers that, if carried out intensively, explosions could kill or injure dugongs and change local distribution patterns.

Explosions have two main components that affect marine animals:

### **Shock waves**

- Shock waves create a rapid change of pressure that can cause damage to internal air spaces (for example, swim bladders of fish, or the lungs, ears and intestinal spaces in marine mammals), and can shatter bones of marine mammals. Effects can be direct (death) or indirect through injuries which lead to cardiac arrest, stroke and lung haemorrhaging. Behavioural changes leading to separation of mothers and young and abandonment of areas may also occur.
- The region of shock wave injury has been calculated for some marine mammals. For example, it has been recorded that manatees (a species of herbivorous mammal related to dugongs) will be injured from a small explosive charge up to 40 metres away for adults and to up 85 metres for calves.
- There have been no reports to date of direct mortality of dugongs from underwater detonations. Skeletal remains of a male dugong were found behind a detonation channel on Triangular Island in April 1996. There is no evidence linking these remains to Defence operations. The *Authority* considers it likely that dugongs may be at risk of death, injury and social disruption from detonations in the vicinity of seagrass meadows because the animals move in to feed at high tide when the explosions occur.

### **Noise**

- The ability to communicate by sound is important for marine mammals that inhabit murky waters (such as exist in the *Area*), where sub-surface visibility is usually less than 10 metres. Sound is an efficient form of communication for these animals because it spreads quickly in water. Noise from underwater explosions may interfere with this communication and may cause deafness, hearing damage and social disruption. In mammals, the bond between mother and young can be weakened or destroyed, resulting in death of the young.

## **2.12 Use of explosives as wildlife deterrents**

Scare charges and thunder flashes have proved to be ineffective in frightening species of pinniped and cetaceans, and can be harmful to them. There is no data on their effectiveness in scaring dugongs or other sirenian species. Dugongs are difficult to detect by boat searches in the *Area* because of the poor water clarity and shyness of the animals.

## **2.13 Impacts on seagrass meadows**

Explosives can cause dieback in seagrass by damaging cells in the rhizomes. Increased sedimentation is also created, which can smother meadows and reduce light penetration to the plants. Nutrient changes may also occur, resulting in increased algal growth which can smother seagrass meadows.

An unusual coverage of filamentous green algae was recorded in meadows around Triangular Island, in Hideaway Bay and Little Bang Bay in 1995 and 1996. This growth may be indicative of seasonal growth patterns or nutrient enhancement. Because algal growth was not recorded in any other sites surveyed in the *Area*, the Authority believes that the occurrence at Triangular Island may be related to increased amounts of phosphates from explosives.

## **2.14 Management response**

The *Authority* has agreed with the Royal Australian Navy that the Navy will take the following actions to ensure the safety of dugong during exercises involving underwater detonations:

- (a) future underwater detonations in the Triangular Island area will be restricted to Little Bang Bay, Big Bang Bay, and Barricade Passage with naval activities ceasing in Hideaway Bay (on the south east corner of the island);
- (b) boat searches for dugongs will be conducted before detonations.

## ***Division 4—Indigenous threats***

## **2.15 Traditional hunting and gathering**

Although *traditional hunting and gathering* has not contributed to the recent decline in the dugong population in the *Area*, the elders of the Darumbal-Noolar Murree Corporation for Land and Culture have decided that it is not appropriate to hunt dugongs in the *Area* while the species is endangered.

## **2.16 Management response**

Under subsection 39ZA (1) of the Act, the *Authority* entered into an agreement with the Darumbal-Noolar Murree Aboriginal Corporation for Land and Culture on 1 August 1996, to the effect that:

- (a) it would be inappropriate for indigenous hunting to occur in the *Area* for the time being; and
- (b) the appropriateness of hunting dugong will be reviewed by the *Authority* and the Corporation after considering recommendations made following a survey of dugong populations in 1999; and
- (c) the *Authority* and the Corporation will seek to inform other people of the Agreement and to explain its rationale; and
- (d) the *Authority* will liaise with the Corporation to enhance a cooperative approach to the conservation and management of the dugong population and other marine resources in the *Marine Park*.

### *Division 5—Threats from the use of vessels*

## **2.17 Collisions with vessels**

*Vessels* are a known cause of mortality to sirenian species, for example, the West Indian manatee (*Trichechus manatus*) off the coast of Florida, USA. The *Authority* is aware that vessels have collided previously with dugongs in the *Marine Park*. The *Authority* considers that increasing vessel activity in the *Area*, particularly in shallow areas of importance to local dugong populations, may threaten the safety of the animals. *Vessel* activity in the *Area* includes naval ships and commercial fishing boats, as well as recreational *vessels* (for example cruising yachts and motor boats).

Studies on the incidence of watercraft collision with manatees off the coast of Florida have found that medium to large watercraft are more likely to kill or injure manatees than small boats. Motors with more than 10 horsepower are the most dangerous and there is also an increasing risk to manatees from personal motorised watercraft (for example, jet skis). Most injuries are caused by blows from the hull of a vessel or from propeller cuts. Collisions may cause death or debilitating injuries and may reduce breeding capability. The *Authority* considers that similar risks may apply to dugongs in the *Area*.

## **2.18 Management response**

If required, the *Authority* will consider amending the Shoalwater Bay



(Dugong) Plan of Management to restrict the use of *vessels* in the *Area*, and to require the use of propeller guards.

## **PART 3 RESEARCH**

### **3.1 Introduction**

Current research programs in the *Area* include seagrass monitoring and satellite tracking of dugongs to provide information on their movement and behaviour.

### **3.2 Proposed research programs**

The *Authority* has proposed that the following research be undertaken in the *Area* in relation to dugongs, and their habitat:

- (a) a 5 year survey of seagrass meadows;
- (b) the inclusion of the *Area* in the aerial survey of *Marine Park* dugong populations proposed to occur in 1999;
- (c) as agreed between the *Authority* and the Royal Australian Navy—an investigation into:
  - (i) effective methods of deterring dugongs from detonation sites; and
  - (ii) the impact of underwater detonations on seagrass meadows and dugongs.



# Commonwealth of Australia

*Great Barrier Reef Marine Park Act 1975*

## Shoalwater Bay (Dugong) Plan of Management<sup>1</sup>

SB01/97

THE GREAT BARRIER REEF *Marine Park* AUTHORITY, having regard to the protection of world heritage values of the Great Barrier Reef Marine Park, and the precautionary principle within the meaning of section 3.5.1 of the Intergovernmental Agreement on the Environment (a copy of which is set out in the Schedule to the *National Environment Protection Council Act 1994*), has prepared the following plan of management under Part VB of the *Great Barrier Reef Marine Park Act 1975*.

Dated 20th of February 1997.

Dr Ian Mc Phail  
Chairperson

Rhondda Jones  
Member

Evelyn Scott  
Member

Tom Tolhurst  
Member

Note: The plan of management includes alterations made by the Authority under paragraph 39ZE (3) (a) of the Act, notice of which was published in the *Commonwealth of Australia Gazette*, under paragraph 39ZE (4) (a) of the Act, on 2nd of April 1997.

# PART 1 PRELIMINARY

## INTRODUCTORY NOTE

Shoalwater Bay is an area of significant regional importance for dugongs (*Dugong dugon*) because it provides the most important habitat for one of the most substantial populations of the species remaining in the southern section of the *Marine Park*. The conservation of this reservoir population is regarded as essential for the long-term viability of the regional population.

This Plan has been prepared in response to the recent decline in dugong numbers in the southern section of the *Marine Park*. The *Authority* considers that a major cause of this decline is the accidental capture of dugongs in mesh nets in the *Area*.

This Plan provides a framework for managing use of the *Area* to ensure that dugongs are managed to enable their recovery and continued protection and conservation.

### 1. Citation

This Plan may be cited as the Shoalwater Bay (Dugong) Plan of Management.

- [Notes: 1. This Plan (except Part 4) commences on the day on which the notice referred to in subsection 39ZE (4) of the *Act* is published in the *Gazette*: see *Act*, s. 39ZF (1).
2. Part 4 of this Plan commences on the day on which regulations made under paragraph 66 (2) (ba) of the *Act* declare that the Part takes effect: see *Act*, s. 39ZF (2).]

### 2. Interpretation

2.1 In this Plan, unless the contrary intention appears:

<i>Act</i>	means the <i>Great Barrier Reef Marine Park Act 1975</i> ;
<i>Area</i>	means the Shoalwater Bay area described in the Schedule (and depicted generally in the map set out in the Schedule);
<i>cast net</i>	has the same meaning as in the Fisheries Regulation 1995 (Qld), as in force at the date of this Plan;

<i>collecting</i>	has the same meaning as in the <i>zoning plan</i> ;
<i>dilly</i>	has the same meaning as in the Fisheries Regulation 1995 (Qld), as in force at the date of this Plan;
<i>Mackay/Capricorn Section</i>	means the area assigned the name “Great Barrier Reef Marine Park—Mackay/Capricorn Section” by Proclamation made under subsection 31 (1) of the <i>Act</i> and published in the <i>Gazette</i> on 24 September 1987;
[Note: For the meaning of <i>Gazette</i> see <i>Acts Interpretation Act 1901</i> , ss. 17 (m) and 46 (1) (a).]	
<i>relevant permission</i>	has the same meaning as in the Great Barrier Reef Marine Park Regulations;
<i>stowed or secured</i>	has the same meaning as in the <i>zoning plan</i> ;
<i>taking</i>	has the same meaning as in the <i>zoning plan</i> ;
<i>traditional hunting and gathering</i>	has the same meaning as in the <i>zoning plan</i> ;
<i>zone</i>	means a zone referred to in the <i>zoning plan</i> ;
<i>zoning plan</i>	means the <i>zoning plan</i> for the <i>Mackay/Capricorn Section</i> which came into force on 1 August 1988, copies of which may be obtained from the <i>Authority</i> .

[Note: Unless the contrary intention appears, words and expressions used in this Plan that are defined in the *Act* have the same meaning in this Plan as they do in the *Act*: see *Acts Interpretation Act 1901*, s. 46 (1) (a). For example, the *Act* contains definitions of *Authority*, *Marine Park* and *vessel*.]

**2.2** The origin of geographical coordinates used in this Plan is the Australian Geodetic Datum 1966 (AGD66).

**2.3** The Preface, introductory notes, background notes and other notes do not form part of this Plan, and are provided for information only.

## PART 2 MANAGEMENT ISSUES

### BACKGROUND NOTE TO PART 2

Dugongs are considered vulnerable to extinction by the World Conservation Union. In Queensland, the dugong is listed as a vulnerable animal under the *Nature Conservation Act 1992 (Qld)*.

Historically, dugongs have lived in waters of the western Pacific and Indian Oceans, but human activities have caused it to disappear in much of this region. The majority of its world population is now believed to exist in the tropical and sub-tropical waters of Australia, although much of this area has not been surveyed. The estimated population of the surveyed region is around 80,000, of which about 15% (around 12,000) live in the *Marine Park*. Since 1987, dugong numbers have declined by more than half in the southern region of the *Marine Park* (from Cape Bedford to Hervey Bay), which includes the *Area*. The *Authority* considers the *Area* to be the most important dugong habitat in the region.

Dugongs feed on intertidal seagrass meadows in the *Area*. These meadows are also harvested for fish by fishers using mesh nets, in which at least 12 dugongs are believed to have drowned in 1994 and 1995.

Further information about dugongs, and their conservation, is set out in the Preface (Recovery plan for dugongs in Shoalwater Bay).

### 3. Endangered species—dugong

For paragraph 39Y (b) of the *Act*, the *Authority* considers that *Dugong dugon* (commonly known as dugong) is an endangered species in the *Area*.

### 4. Management of use

For paragraph 39Y (c) of the *Act*, the *Authority* considers that the netting of fish is an activity that must be managed in the *Area* on the basis of ecologically sustainable use.

[Note: Section 39Y of the *Act* sets out the objects of plans of management. Those objects are:

- (a) to ensure, for particular areas of the *Marine Park* in which the *Authority* considers that nature conservation values, cultural and heritage values, or scientific values are, or may be, threatened, that appropriate proposals are developed to reduce or eliminate the threats; and
- (b) to ensure that species and ecological communities that are, or may become, vulnerable or endangered are managed to enable their recovery and continued protection and conservation; and

- (c) to ensure that activities within areas of the *Marine Park* are managed on the basis of ecologically sustainable use; and
- (d) to provide a basis for managing the uses of a particular area of the *Marine Park* that may conflict with other uses of the area or with the values of the area; and
- (e) to provide for the management of areas of the *Marine Park* in conjunction with community groups in circumstances where those groups have a special interest in the areas concerned; and
- (f) to enable people using the *Marine Park* to participate in a wide range of recreational activities.]

## PART 3 RELEVANT PERMISSIONS

### 5. Collecting dugong

**5.1** The *Authority* must not grant a person a *relevant permission* to enter into or use a *zone* in the *Area* for the purpose of *collecting* dugong, unless the *collecting* is for the conduct of research.

**5.2** However, the *Authority* may grant a person a *relevant permission* to enter into or use a *zone* in the *Area* for the purpose of *traditional hunting and gathering* (including the *traditional hunting and gathering* of dugong).

## PART 4 ENFORCEMENT PROVISIONS

### INTRODUCTORY NOTES TO PART 4

1. Regulations may be made providing for giving effect to the enforcement provisions of a plan of management or to the enforcement provisions of an amendment of a plan of management: see *Act*, paragraph 66 (2) (ba).
2. The *Act* provides for offences in relation to:
  - (a) the use or entry of a *zone* for a purpose other than a purpose permitted under a *zoning plan*; or
  - (b) the use or entry of a *zone* without a *relevant permission* where permission is required under the *zoning plan*; or
  - (c) the contravention of a condition to which a *relevant permission* is subject.

See *Act*, ss. 38A, 38B and 38C.

## **6. Restrictions on the use of nets in the Area**

**6.1** This clause does not apply to a person who uses or enters the Area only for a purpose mentioned in paragraph 16 (a) or (b) of the *zoning plan*.

[Note: Clause 16 of the *zoning plan* relevantly provides that a zone or designated area may be used or entered for the purpose of :

- “(a) saving human life or avoiding the risk of injury to a human being;
- (b) locating or securing the safety of an aircraft, vessel or structure which is, or may be, endangered by stress of weather or by navigational or operational hazards;”.]

**6.2** A person must not have in the Area a net that is capable of being used for the taking of fish.

**6.3** However, a person may have in the Area a net that is capable of being used for the *taking* of fish if:

- (a) the person has a *relevant permission* granted for the conduct of research; or
- (b) the net is part of a *dilly* for use only to catch crabs; or
- (c) the net is a *cast net* that:
  - (i) is for use only to catch fish for bait; and
  - (ii) is not more than 6 metres in diameter; and
  - (iii) has a mesh size of not more than 28 millimetres.

**6.4** A person must not have more than 1 *cast net* in the Area at any time.

**6.5** To avoid doubt, a person may be taken to have a net in the Area whether or not the net is *stowed or secured*.

## **7. Collecting dugongs**

A person must not *collect* a dugong in the Area except in accordance with a *relevant permission*.

## **8. Interference with dugongs**

**8.1** A person must not interfere with a dugong, or the carcass of a dugong, in the Area, except in accordance with a written authority given by the *Authority*.

**8.2** In this clause, “**interfere with**” does not include *collect*, whether by *traditional hunting and gathering* or by other means.

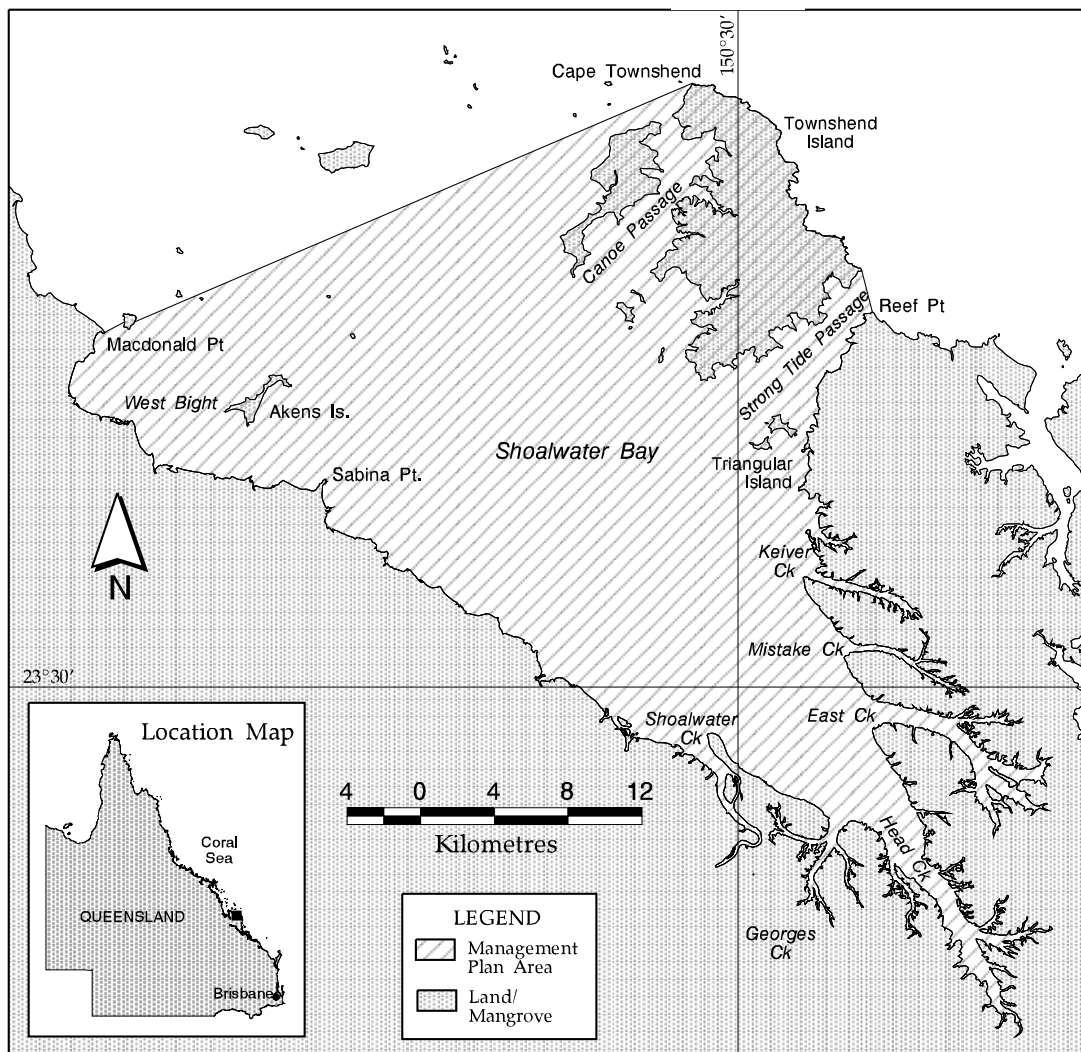


**SHOALWATER BAY AREA**

The *Area* is that part of the *Marine Park* bounded by a line:

- (a) commencing at the easternmost intersection of the coastline of the mainland at low water by the parallel of latitude 22°19'38.6" south (that is, at Macdonald Point); and
- (b) running then generally north-easterly along the geodesic to the westernmost intersection of the coastline of Swan Island at high water by the parallel of latitude 22°19'19.8" south; and
- (c) then generally northerly, easterly and southerly along the coastline of that island at high water to the easternmost intersection of that coastline by the parallel of latitude 22°19'19.8" south; and
- (d) then generally north-easterly along the geodesic to the northernmost intersection of the coastline of Townshend Island at low water by the meridian of longitude 150°28'42.0" east, in the vicinity of Cape Townshend; and
- (e) then generally south-easterly, southerly, south-easterly and southerly along the eastern coastline of Townshend Island at low water to the easternmost intersection of that coastline by the parallel of latitude 22°17'50.8" south; and
- (f) then generally southerly along the geodesic to the northernmost intersection of the coastline of the mainland at low water by the meridian of longitude 150°33'55.1" east, in the vicinity of Reef Point; and
- (g) then generally south-westerly, southerly, south-easterly, westerly and north westerly along that coastline at low water to the point of commencement.

## Map of Area



### NOTE

1. Notified in the *Commonwealth of Australia Gazette* on 2nd of April 1997.





