

NOMINATION OF

# The Great Barrier Reef

by the Commonwealth of Australia

FOR INCLUSION IN THE

## World Heritage List

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION



prepared by:  
Great Barrier Reef Marine Park Authority  
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# Convention concerning the protection of the world cultural and natural heritage

## **World Heritage List**

### **Nomination Form**

Under the terms of the Convention concerning the Protection of the World Cultural and Natural Heritage, adopted by the General Conference of Unesco in 1972, the Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage, called "the World Heritage Committee" shall establish, under the title of "World Heritage List", a list of properties forming part of the cultural and natural heritage which it considers as having outstanding universal value in terms of such criteria it shall have established.

The purpose of this form is to enable States Parties to submit to the World Heritage Committee nominations of properties situated in their territory and suitable for inclusion in the World Heritage List.

Notes to assist in completing each page of the form are provided opposite the page to be completed. Please type entries in the spaces available. Additional information may be provided on pages attached to the form.

It should be noted that the World Heritage Committee will retain all supporting documentation (maps, plans, photographic material, etc.) submitted with the nomination form.

The form completed in English or French should be sent in three copies to:

The Secretariat  
World Heritage Committee  
Division of Cultural Heritage  
Unesco  
7, Place de Fontenoy  
75700 Paris

## 1. Specific location

### a) **Country**

Give full name of State Party on whose territory property is located.

Australia.

### b) **State, Province or Region**

Give full name of State, Province or Region where property is located. If property overlaps State, Provincial or Regional boundaries, provide names of all overlapped States, Provinces and/or Regions.

Off the east coast of the Queensland mainland. (See Figure 2 page 8.)

### c) **Name of property**

Local name of property and other names by which property is known, to be provided. In case a change of name has occurred, provide name(s) by which property was previously known.

The Great Barrier Reef.

### d) **Exact location on map and indication of geographical co-ordinates**

Maps and plans showing exact location and boundaries of property are essential (see 3b below). Please provide latitude and longitude co-ordinates and/or a grid reference. For grid references, the type of grid should also be given.

For properties in urban areas, the name of the town or city, and the street and number, should be added.

If an area surrounding nominated property is considered essential for the protection of the property, e.g. a buffer zone, indications should also be provided on the boundaries of this area.

See Schedule 1 to this nomination.

## 2. Juridical data

### a) **Owner**

Specify the name and address of the current owner(s) of property.

The Great Barrier Reef is the subject of public title. The details are set out on page 11 of Appendix One to this nomination.

### b) **Legal status**

Indicate the category of ownership (public or private) and in the case of privately owned property, whether public acquisition is in process or being considered. Provide details of protective, legal and administrative measures envisaged or already taken for the conservation of the property (e.g. creation of national park). Give details on the state of occupancy of the property and its accessibility to the general public.

All parts of the Great Barrier Reef lie within the outer limits of the territorial sea of Australia, or on the Continental Shelf of Australia. The *Great Barrier Reef Marine Park Act 1975* (Commonwealth of Australia) applies to the Great Barrier Reef Region as defined in that Act. Other Commonwealth and Queensland legislation also applies to the Reef.

### c) **Responsible administration**

Give name(s) and address(es) of body (bodies) responsible for administration of property.

The Government of the Commonwealth of Australia,  
The Government of the State of Queensland.

## 3. Identification

### a) **Description and inventory**

A detailed description of the property is to be provided. The property should fall into one of the following categories, defined in Articles 1 and 2 of the Convention:

#### *Cultural heritage*

"monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;

groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;

sites: works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view."

*Natural heritage*

"natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;

geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;

natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty."

Give the size of the area of the property and, where applicable, of the buffer zone. The description should include precise details on the particular characteristics of the property. Details of the present and/or proposed use of the property should be included in this description.

The area of this nomination coincides with the area described in the Schedule of the *Great Barrier Reef Marine Park Act 1975*, as amended in 1978. The area extends approximately 2000 km along the eastern coast of Queensland from just north of Fraser Island in the south (24°30'S) to the Latitude of Cape York in the north (10°41'S), and covers an area of 348,700 sq km on the Continental Shelf of Australia. It is acknowledged to be an area of great natural beauty and wonder.

The Great Barrier Reef is not a continuous barrier but a broken maze of coral reefs, some with coral islands called cays. The Reef comprises some 2500 individual reefs which range in size from less than one hectare to more than 100 square kilometres, and in shape from flat platform reefs to elongate ribbon reefs. In some places the reefs are separated by channels of no more than 200 metres width, while elsewhere they may be as much as 20 kilometres apart. Most reefs are submerged, with some being exposed at low tide.

The individual reefs of the Great Barrier Reef are composed of the accumulated remains of plant and animal calcium carbonate skeletal material, supporting a veneer of living plants and animals. There are 71 cays on the Reef.

The Great Barrier Reef is the world's largest and most complex expanse of living coral reefs, encompassing many unique forms of marine life. There are over 1500 species of fish and about 400 species of coral. Other well represented animal groups include sponges, anemones, marine worms, crustaceans, molluscs and echinoderms. This great diversity of life forms, especially in the endemic species, makes it an area of enormous scientific importance.

A more detailed description of the natural and cultural features of the Great Barrier Reef is provided on pages 11 to 14 of Appendix One.

**b) *Maps and/or plans***

Detailed maps showing the location and boundaries of the property (see section 1d above) should be attached to this form, referring to official survey maps where possible.

For properties which are located in urban areas, it may be necessary to use in addition to a small-scale map on which the geographical co-ordinates will be indicated, a large-scale map or a detailed plan so that the location of the property will be accurately indicated. List under item 3b the maps and/or plans attached.

Figure 1: Zoning plan – Capricornia Section – Zoning Map (Page 7)

Figure 2: Location (Page 8)

Figure 3: Geological sectors (Page 8)

Figure 4: Area of this nomination (Page 8)

Schedule 1: Geographical description of the area of this nomination (Page 9)

**c) *Photographic and/or cinematographic documentation***

Supporting documentation in the form of photographs, slides, etc. may be attached. List under section 3c all such documentary items, and indicate their source.

Plates 1–35 show:

- aerial views;

- underwater landscapes; and
- some of the flora and fauna of the Great Barrier Reef.

**d) History**

As far as cultural property is concerned, information may be supplied on the following:

- for monuments and groups of buildings: the period(s) represented, with the date(s) of construction and name(s) of principal architect(s) if known; original condition and subsequent changes; original and later functions;
- for an archaeological site: its origin; subsequent principal changes in terms of form, group occupying site, significance, etc.; year of discovery and name of archaeologist concerned, if appropriate.

For property located in zones where natural disasters may occur (earthquakes, landslides, floods, etc.), provide all relevant data; for instance, in the case of property located in a seismic zone, give details on all previous seismic activity, on the precise location of the property in relation to the seismic zone, seismic calculations and analysis, etc.

As far as natural property is concerned information may be supplied on the following:

- natural history of the site;
- present and past modifications by man of the natural property including information on human population and settlements within the natural heritage site;
- history of the natural property as a conservation unit.

The major features of the history of the Great Barrier Reef are summarised on pages 15 to 17 of Appendix One.

**e) Bibliography**

List but do not attach all published material that includes important references to property, and which provide sources for the compilation of this nomination.

A bibliography of published material on the Great Barrier Reef by E. Frankel is available through the Australian Government Publishing Service (Frankel, E., *Bibliography of the Great Barrier Reef Province*. Australian Government Publishing Service, Canberra, 1978.)

A supplementary bibliography listing material additional and subsequent to that covered by Frankel's bibliography is provided in Appendix Four pages 29 to 37. A list of principal references used in this nomination is set out in Appendix Three (page 27).

**4. State of preservation/conservation**

**a) Diagnosis**

Describe the present condition of property. In cases where the condition of the property is in imminent or potential danger, provide details.

The major portion of the Reef is in a reasonably pristine condition. The ecosystem of the reef is subject to some pressures from recreational pursuits and commercial fishing, siltation through natural run-off from coastal streams, in a few areas agricultural and industrial discharges from the mainland, and sea-based discharges.

**b) Agent responsible for preservation/conservation**

Give name and address of body or bodies responsible for state of preservation/conservation of property (as distinct from administrative responsibility — see item 2c above).

Great Barrier Reef Marine Park Authority  
 Queensland National Parks and Wildlife Service  
 Queensland Fisheries Service

Further details are given on page 17 of Appendix One.

**c) History of preservation/conservation**

Provide details of preservation/conservation work undertaken on property and of preservation/conservation work that is still required.

The *State Forests and National Parks Act 1903-1948* (Queensland) provided the means for the gazettal of national parks until 1959. Under this Act, parts of Green Island (1937) and Heron Island (1943) were gazetted as national parks. Further national parks in the Reef area were gazetted

under the *Forestry Act 1959-1976* (Queensland), as were the first marine parks on the Reef — Heron-Wistari and Green Island Marine Parks (1974). In 1976 these powers were transferred to the *National Parks and Wildlife Act 1976* and *Fisheries Act 1976* respectively. The *Great Barrier Reef Marine Park Act* was enacted by the Parliament of the Commonwealth of Australia in 1975. The first section of the Great Barrier Reef Marine Park, the Capricornia Section, was proclaimed in 1979. On 14 June 1979, the Prime Minister of Australia and the Premier of Queensland in establishing the Great Barrier Reef Ministerial Council affirmed that the basic policy intention of both governments was to ensure that the Great Barrier Reef area be recognised and preserved as an important feature of Queensland's and Australia's heritage. They also confirmed that it was the policies of their respective governments to prohibit any drilling on the Reef or any drilling or mining which could damage the Reef. (For the statement refer to Appendix Two page 26.)

Further details are set out on pages 18 and 19 of Appendix One.

**d) Means for preservation/conservation**

Under this item information should be provided on actual or pending laws or policies which establish the property as a conservation unit, on the technical means available, on the institutional context in which the property is managed, as well as on the financial resources available for preservation/conservation of the property.

The *Great Barrier Reef Marine Park Act 1975* created the Great Barrier Reef Marine Park Authority. It is advised by a 15-member Consultative Committee. Funds available to the Authority in 1980/81 were approximately \$A2.1 million.

The Great Barrier Reef Ministerial Council co-ordinates Government policy on the Reef.

Day-to-day management of declared sections of the Marine Park is to be undertaken by officers of the appropriate Queensland authorities who, in discharging these responsibilities, will be subject to the Great Barrier Reef Marine Park Authority.

Most of the islands in the area are national parks administered by the Queensland National Parks and Wildlife Service.

Further details are set out on pages 19 and 20 of Appendix One.

**e) Management plans**

Give details of any relevant existing local, regional or national plans (urban development, land reform, etc.) and their implications for the property.

A zoning plan is required to be produced for each section of the Great Barrier Reef Marine Park. A zoning plan has been produced (Figure 4 Page 8) for the Capricornia Section of the Great Barrier Reef Marine Park and is before the Commonwealth Parliament for acceptance. The implementation of the zoning plan will be through day-to-day management plans and guidelines established by the Authority and operational procedures developed by Queensland Government instrumentalities. These arrangements are described in more detail on pages 20 and 21 of Appendix One.

## **5. Justification for inclusion on the World Heritage list**

A statement to be made on the significance (i.e. its "outstanding universal value" in the terms of the Convention) of the property that justifies it for inclusion in the World Heritage List. Property will be evaluated against the following criteria adopted by the World Heritage Committee:

- a) For *cultural property*, outstanding universal value will be recognized when a monument, group of buildings or site — as defined in Article 1 of the Convention — submitted for inclusion in the World Heritage List is found to meet one or more of the following criteria. Therefore, each property should:
  - (i) represent a *unique artistic or aesthetic* achievement, a *masterpiece* of the creative genius; or

- (ii) have exerted considerable *influence*, over a span of time or within a cultural area of the world, on *subsequent developments* in architecture, monumental sculpture, garden and landscape design, related arts, or human settlement; or
- (iii) be *unique, extremely rare, or of great antiquity*; or
- (iv) be among the most characteristic examples of a *type* of structure, the type representing an important cultural, social, artistic, scientific, technological or industrial development; or
- (v) be a characteristic example of a significant, *traditional* style of architecture, method of construction, or *human settlement*, that is fragile by nature or has become vulnerable under the impact of irreversible socio-cultural or economic change; or
- (vi) be most importantly *associated* with ideas or beliefs, with events or with persons, of outstanding historical importance or significance.

In every case, consideration must be given to the state of preservation of the property (which should be evaluated relatively, in comparison to the state of preservation of other property dating from the same period and of the same type and category).

In addition, the property should meet the test of *authenticity* in design, materials, workmanship and setting; authenticity does not limit consideration to original form and structure but includes all subsequent modifications and additions, over the course of time, which in themselves possess artistic or historical values.

The area of this nomination contains many middens and other archaeological sites of Aboriginal or Torres Strait Islander origin. There are over 30 historic shipwrecks in the area, and on the islands there are ruins and operating lighthouses which are of cultural and historical significance.

- b) For *natural property*, outstanding universal value will be recognized when a natural heritage property — as defined in Article 2 of the Convention — submitted for inclusion in the World Heritage List, is found to meet one or more of the following criteria. Therefore, properties nominated should:
  - (i) be outstanding examples representing *the major stages of the earth's evolutionary history*. This category would include sites which represent the major "eras" of geological history such as "the age of reptiles" where the development of the planet's natural diversity can well be demonstrated and such as the "ice age" where early man and his environment underwent major changes; or
  - (ii) be outstanding examples representing significant ongoing *geological processes, biological evolution and man's interaction with his natural environment*. As distinct from the periods of the earth's development, this focuses upon ongoing processes in the development of communities of plants and animals, landforms and marine and fresh water bodies. This category would include for example (a) as geological processes, glaciation and volcanism, (b) as biological evolution, examples of biomes such as tropical rainforests, deserts and tundra (c) as interaction between man and his natural environment, terraced agricultural landscapes; or
  - (iii) contain *unique, rare or superlative natural phenomena, formations or features or areas of exceptional natural beauty*, such as superlative examples of the most important ecosystems to man, natural features, (for instance, rivers, mountains, waterfalls), spectacles presented by great concentrations of animals, sweeping vistas covered by natural vegetation and exceptional combinations of natural and cultural elements; or
  - (iv) be *habitats where populations of rare or endangered species of plants and animals still survive*. This category would include those ecosystems in which concentrations of plants and animals of universal interest and significance are found.

It should be realized that individual sites may not possess the most spectacular or outstanding single example of the above, but when the sites are viewed in a broader perspective with a complex of many surrounding features of significance, the entire area may qualify to demonstrate an array of features of global significance.

In addition to the above criteria, the sites should also meet the conditions of *integrity*:

- The areas described in (i) above should contain all or most of the key interrelated and interdependent elements in their natural relationships; for example, an "ice age" area would be expected to include the snow field, the glacier itself and samples of cutting patterns, deposition and colonization (striations, moraines, pioneer stages of plant succession, etc.).
- The areas described in (ii) above should have sufficient size and contain the necessary elements to demonstrate the key aspects of the process and to be self-perpetuating. For example, an area of "tropical rain forest" may be expected to include some variation in elevation above sea level, changes in topography and soil types, river banks or oxbow lakes, to demonstrate the diversity and complexity of the system.
- The areas described in (iii) above should contain those ecosystem components required for the continuity of the species or of the objects to be conserved. This will vary according to individual cases; for example, the protected area for a waterfall would include all, or as much as possible, of the supporting upstream watershed; or a coral reef area would be provided with control over siltation or pollution through the stream flow or ocean currents which provide its nutrients.
- The areas described in (iv) above should be of sufficient size and contain the necessary habitat requirements for the survival of the species.

The Great Barrier Reef is by far the largest single collection of coral reefs in the world. Biologically the Great Barrier Reef supports the most diverse ecosystem known to man. Its enormous diversity is thought to reflect the maturity of an ecosystem which has evolved over millions of years on the north east Continental Shelf of Australia.



The Great Barrier Reef provides some of the most spectacular scenery on earth and is of exceptional natural beauty. The Great Barrier Reef provides major feeding grounds for large populations of the endangered species *Dugong dugon* and contains nesting grounds of world significance for the endangered turtle species green turtle (*Chelonia mydas*) and loggerhead turtle (*Caretta caretta*).

The Great Barrier Reef thus meets all four criteria set out in Article 2 of the World Heritage Convention:

- (i) being an outstanding example representing a major stage of the earth's evolutionary history;
- (ii) being an outstanding example representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment;
- (iii) containing unique, rare and superlative natural phenomena, formations and features and areas of exceptional natural beauty; and
- (iv) providing habitats where populations of rare and endangered species of plants and animals still survive.

The area nominated is of outstanding universal value on the basis of its natural heritage and in recognition of this Governments have acted, and will continue to act, to preserve these features.

The area nominated also meets the condition of integrity in that it includes the areas of the sea adjacent to the Reef.

The area of this nomination contains many middens and other archaeological sites of Aboriginal or Torres Strait Islander origin. There are over 30 historic shipwrecks in the area, and on the islands there are ruins and operating lighthouses which are of cultural and historical significance.



GREAT BARRIER REEF MARINE PARK AUTHORITY  
**GREAT BARRIER REEF MARINE PARK**  
**CAPRICORNIA SECTION**

**ZONING MAP**



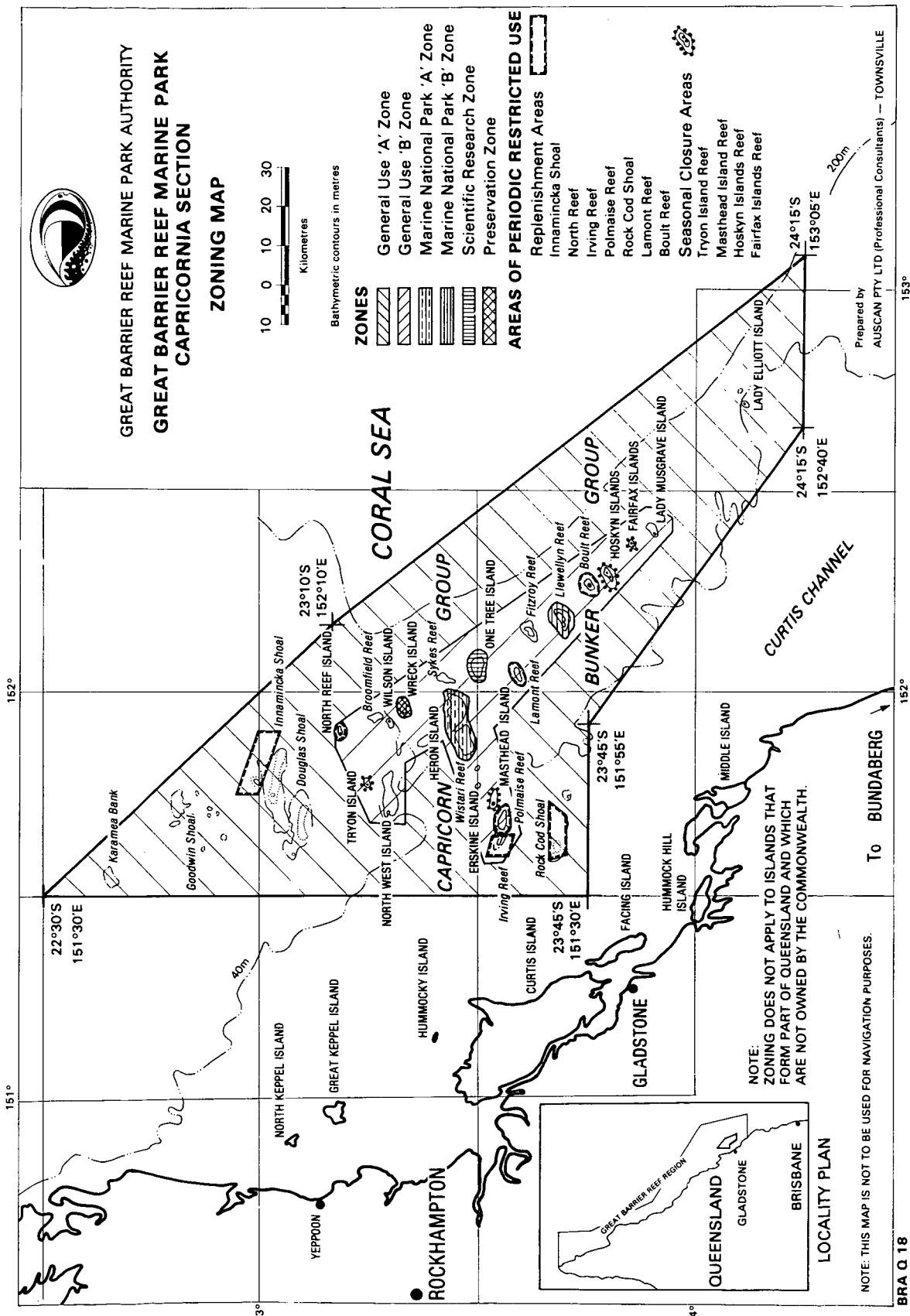
Bathymetric contours in metres

**ZONES**

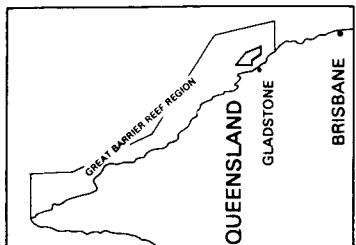
- General Use 'A' Zone
- General Use 'B' Zone
- Marine National Park 'A' Zone
- Marine National Park 'B' Zone
- Scientific Research Zone
- Preservation Zone

**AREAS OF PERIODIC RESTRICTED USE**

- Replenishment Areas
- Innamincka Shoal
- North Reef
- Irving Reef
- Polmaise Reef
- Rock Cod Shoal
- Lamont Reef
- Boulton Reef
- Seasonal Closure Areas
- Tryon Island Reef
- Masthead Island Reef
- Hoskyn Islands Reef
- Fairfax Islands Reef



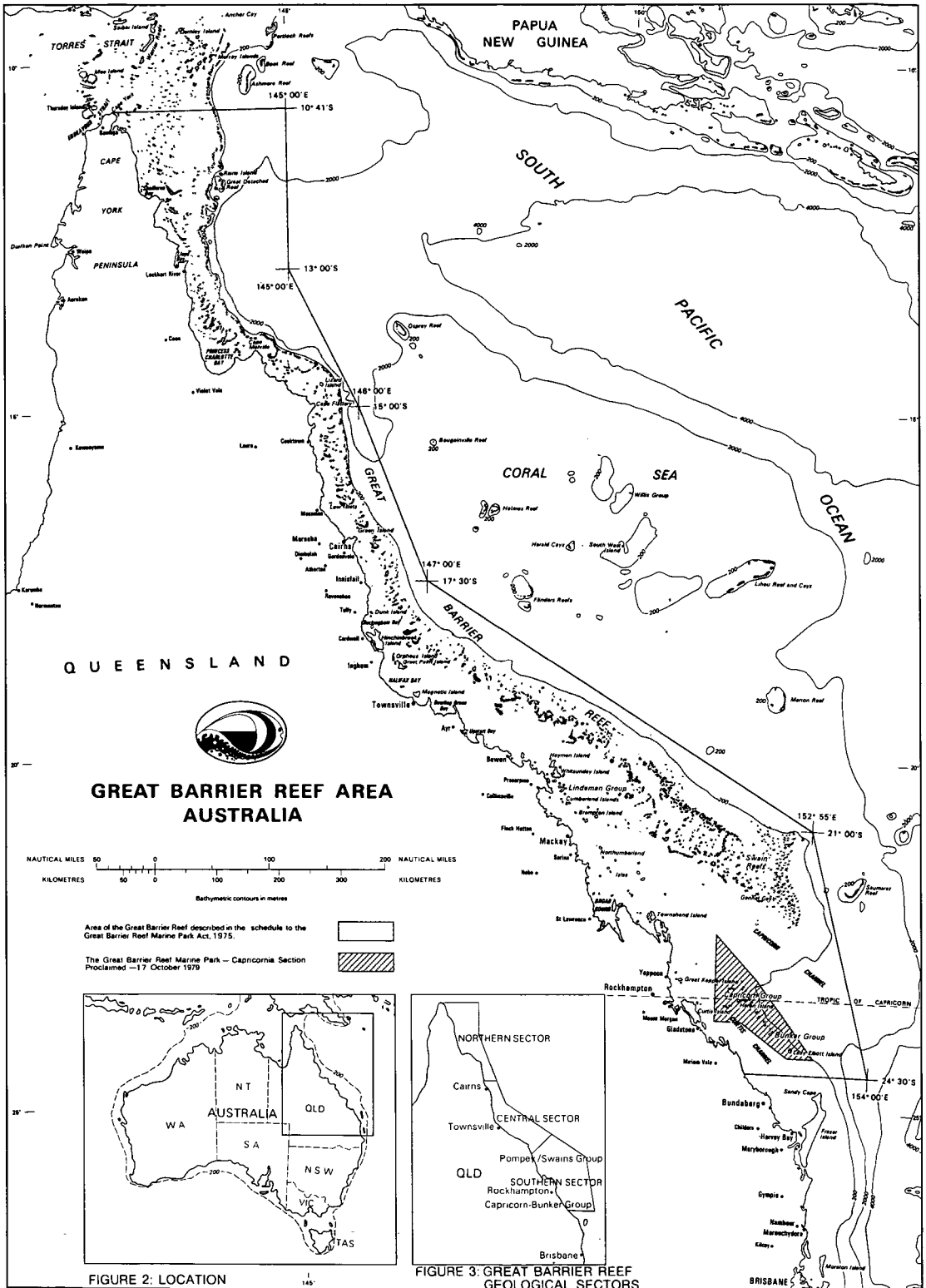
NOTE:  
 ZONING DOES NOT APPLY TO ISLANDS THAT  
 FORM PART OF QUEENSLAND AND WHICH  
 ARE NOT OWNED BY THE COMMONWEALTH.



LOCALITY PLAN

NOTE: THIS MAP IS NOT TO BE USED FOR NAVIGATION PURPOSES.

Prepared by  
 AUSSCAN PTY LTD (Professional Consultants) — TOWNSVILLE



## **SCHEDULE 1**

### **Geographical description of the area of this nomination**

This nomination applies to the area the boundary of which —

- (a) commences at the point that, at low water, is the northernmost extremity of Cape York Peninsula, Queensland;
- (b) runs thence easterly along the geodesic to the intersection of parallel of Latitude  $10^{\circ}41'$  South with meridian of Longitude  $145^{\circ}00'$  East;
- (c) runs thence southerly along that meridian to its intersection by the parallel of Latitude  $13^{\circ}00'$  South;
- (d) runs thence south-easterly along the geodesic to a point of Latitude  $15^{\circ}00'$  South Longitude  $146^{\circ}00'$  East;
- (e) runs thence south-easterly along the geodesic to a point of Latitude  $17^{\circ}30'$  South Longitude  $147^{\circ}00'$  East;
- (f) runs thence south-easterly along the geodesic to a point of Latitude  $21^{\circ}00'$  South Longitude  $152^{\circ}55'$  East;
- (g) runs thence south-easterly along the geodesic to a point of Latitude  $24^{\circ}30'$  South Longitude  $154^{\circ}00'$  East;
- (h) runs thence westerly along the parallel of Latitude  $24^{\circ}30'$  South to its intersection by the coastline of Queensland at low water; and
- (i) runs thence generally northerly along that coastline at low water to the point of commencement.



1



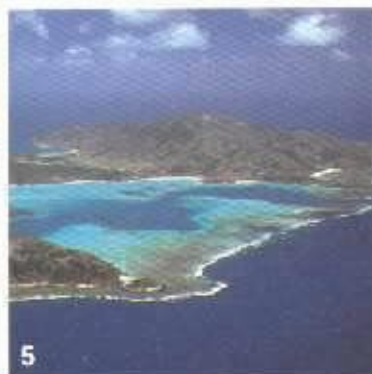
3



2



4



5



6



7

**Plate 1** Aerial view of Hardy Reef — platform reef with suspended lagoon, Central Great Barrier Reef

**Plate 2** Aerial view of Pandora Reef — rubble and sand cay, Central G.B.R.

**Plate 3** Aerial view of No. 2 and No. 3 Ribbon Reefs, Northern G.B.R.

**Plate 4** Aerial view of Lady Musgrave Island — vegetated coral cay, Southern G.B.R.

**Plate 5** Aerial view of Lizard Island — a continental island with fringing reef and lagoon, Northern G.B.R.

**Plate 6** Aerial view of Turtle Group of Islands — vegetated rubble cays, Northern G.B.R.

**Plate 7** Detail of Pickersgill Reef, Northern G.B.R.

# APPENDIX ONE

## Supplement to nomination form

This supplement incorporates additional information in support of the nomination of the Great Barrier Reef for inclusion on the World Heritage List. The sections of the supplement are referenced according to the item of the official nomination form to which they relate.

### 1. Specific location

The location of the Great Barrier Reef is depicted on Figure 4, and the boundaries of the nominated area are set out in Schedule 1.

### 2. Juridical data

#### (a) Owner

##### (i) *Outside the limits of the State of Queensland*

Title to the seabed inside the outer limits of the territorial sea (including territorial sea around Queensland's islands) and exclusive rights to explore and exploit the seabed of the Continental Shelf beyond the territorial sea are vested in the Commonwealth subject to certain limited rights conferred on third parties.

When the *Coastal Waters (State Title) Bill* 1980 (Commonwealth of Australia) comes into force, title to the seabed inside the outer limits of the 3-mile territorial sea will vest in the State of Queensland, subject to a number of reservations including, in particular, the continuing operation of the *Great Barrier Reef Marine Park Act* 1975.

##### (ii) *Within the limits of the State of Queensland*

Public title is vested in the State of Queensland, apart from public lands owned by the Commonwealth. Some land is held by private persons.

### 3. (a) Detailed description and inventory natural heritage

#### (i) *Geography*

The form and structure of the individual reefs which make up the Great Barrier Reef show great variety. Two main classes of reefs can be defined, platform or patch reefs resulting from radial growth, and wall reefs resulting from elongated growth, often in areas with strong water currents. Seventy-one of the reefs have formed coral cays. There are also many fringing reefs where the reef growth is established on subtidal rock of the mainland coast or continental islands.

The Continental Shelf varies in width from a maximum of 290 km off Cape Townshend in the south to a minimum of 24 km near Cape Melville north of Cooktown. North of this point the Shelf again increases in width.

The Shelf displays two general bathymetric gradients. There is a general easterly decline from the shoreline to the outer Reef where the gradient reverses abruptly before declining again towards the continental slope. There is also a general increase in average depth of the Shelf from north to south.

Variations in physical characteristics with latitude allow the area to be divided into three distinct sectors:

1. THE NORTHERN SECTOR includes all the reefs to the north of latitude 16°S, and is characterised by the shallowness of the water covering the Continental Shelf, the depth being generally less than 36 metres for much of the sector. There is an almost continuous line of elongate wall reefs on the outer edge of the Continental Shelf. Between this line and the mainland coast is a great variety of patch reefs, many with cays. Of particular interest are the low wooded islands which are coral

- cays which carry mangrove communities.
2. THE CENTRAL SECTOR includes the area from 16°S to 21°S on the mainland coast, and to about 20° on the edge of the Continental Shelf. Over the greater part of this sector the depth of water ranges from 36 to 55 metres. This sector is characterised by scattered platform reefs separated from each other by distances in the order of 5 to 10 km, and separated from fringing reefs of the mainland coast and coastal continental islands by a channel 15 km wide in the north and 50 km wide in the south.
  3. THE SOUTHERN SECTOR includes the area from 21°S to 24°S, and is the deepest part of the Shelf, with depths ranging down to 145 metres. The northern part of this sector is characterised by a tightly packed maze of wall-like reefs separated from each other by channels, some as small as 100 metres across, which carry strong tidal currents. To the south, where the tidal range is less extreme, the outer Shelf is characterised by the Swain complex of small, tightly packed patch reefs. In the extreme south of this sector, a geological ridge, which lies roughly half way between the mainland coast and the outer edge of the Continental Shelf, carries a group of large patch reefs, the Capricorn and Bunker groups, many of which have well-developed, vegetated coral cays.

(ii) *Climate*

The Great Barrier Reef area has a tropical climate influenced primarily by two features of the southern hemisphere atmospheric circulation — the equatorial low pressure zone during the summer months, and the subtropical high pressure zone during the winter months. As the area lies between the continental mass of Australia and the open ocean of the South Pacific, its climate is also strongly influenced by both the adjacent land mass and oceanic effects.

Wind patterns are dominated for the greater part of the year by the south-east trades. During the months of January to March north-westerlies prevail in the north of the area under the influence of the inter-tropical monsoonal front.

The rainfall pattern is marked by great variability from year to year and in geographical distribution. Rainfall occurs predominantly in the summer months throughout the area, under the influence of the monsoon and the irregular occurrence of tropical cyclones and depressions. Southern parts of the area occasionally receive good falls in winter associated with winter depressions.

Air temperatures vary between an average maximum of about 30°C in January and 23°C in July and an average minimum of about 24°C in January and 18°C in July.

Severe damage may be caused to reefs and cays from the action of winds and waves resulting from cyclones, and by the localised reduction of salinity in sea-water during intense rainfall, resulting in the destruction of living corals.

(iii) *Hydrology*

Within the Great Barrier Reef is a lagoon which is broken up by extensive reefs and has a mean depth of 35 m. Depths over 60 m are uncommon.

While data are scarce, it is estimated that rivers flowing into the lagoon contribute about half as much freshwater as direct rainfall and, as the run-off is highly localised, it can be expected to be both biologically and physically significant.

Tides are generally semidiurnal with diurnal inequality increasing towards the north, becoming almost diurnal in Torres Strait. The maximum tidal range is about 3 m along most of the coast although increasing to 6 to 9 m in the Broad Sound area between 21° and 23°S.

Mean surface water temperature is at a maximum during February and

at a minimum during July. Surface salinity is at a maximum during November and December and at a minimum from February to May.

The water in the lagoon is vertically well-mixed for most of the year with stratification occurring as a result of freshwater input from January to March or April which mainly occurs in the upper 10 m.

There is little information on currents. Existing information concerned with surface currents is conflicting.

Research is being developed as a priority to improve the definition of the system.

(iv) *Corals*

The formation, growth and maintenance of the Great Barrier Reef results from the ability of certain animals and plants in tropical marine waters to produce substantial skeletons of calcium carbonate. This ability is most spectacularly developed in the corals and their high productivity of calcium carbonate is largely the result of the association between the coral polyps and plant cells or zooxanthellae contained in their tissues.

On the Great Barrier Reef there are believed to be some 400 species of coral in 60 genera. The majority belong to the order Scleractinia which have calcareous skeletons. The remainder are the members of the subclass Octocorallia, (soft corals, sea whips and sea fans) which do not produce a calcareous skeleton, and the members of the Class Hydrozoa, two families of which, while producing a calcareous skeleton, are structurally very different from the Scleractinian corals. Many corals have a variety of growth forms which relate to the hydrological regime and exposure of the location in which they develop. Some examples of growth forms and characteristic genera are:

- branching corals, typified by the genera *Acropora* and *Pocillopora*;
- massive brain corals, which are generally rounded structures, exemplified by *Platygyra* and *Leptoria*;
- plate-like corals, which include a large number of genera and a wide range of shapes, characterised by *Acropora*, *Montipora*, and *Turbinaria*;
- encrusting corals, which grow over other organisms as well as reef detritus, characterised by *Montipora*; and
- mushroom corals, which are unattached single polyps with large central mouths of which *Fungia* is the most common.

(v) *Other Invertebrates*

The other important members of the Reef fauna include foraminifera, molluscs (amphineurans, gastropods, lamellibranchs, scaphopods, cephalopods), echinoderms, crustaceans, polychaete worms and ascidians. Many of these species are essential to the kinetic processes of the Reef, in that they penetrate and break up coral and algal structures, contributing large quantities of detritus to the Reef mass.

The molluscan Reef fauna is extremely varied. Over 4000 species of molluscs have so far been collected from the Great Barrier Reef. Some of the better known are trochus shells which are found in coral rubble and on coral and rocky reefs, helmet shells which are readily visible on the sea floor and coral sands of the Reef, and the variously coloured species of cowrie shell.

Perhaps the most conspicuous lamellibranchs on the Reef are the giant clams of the family Tridacnidae.

The Reef supports a variety of echinoderms, for example, starfish, sea urchins and holothurians (beche de mer).

(vi) *Vertebrates*

There are approximately 1500 species of fishes in the Great Barrier Reef area, exhibiting a variety of size, shape, colour and behaviour. There are pelagic (open-water living) species such as marlin (*Makaira indica*) and mackerel (*Scomberomorus* sp.) which move through the Reef area. Large



and colourful demersal (bottom-living) species such as coral trout (*Plectropomus* sp.), sweetlip (*Lethrinus* sp.), red emperor (*Lutjanus sebae*), snapper Lutjanidae, and cod Serranidae, spend most of their lives in and around the reefs. The small brightly coloured territorial fishes, such as butterfly fish Chaetodontidae and damsel fish Pomacentridae, spend most of their adult lives in a restricted and strongly defended territory of a few square metres of a reef.

There are six species of turtles in the Great Barrier Reef area; the green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), flatback (*Chelonia depressa*), loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*) and Pacific Ridley (*Lepidochelys olivacea*). Areas of the Great Barrier Reef are nesting sites of world importance for the green and loggerhead turtles. All turtles are protected species under Commonwealth and Queensland legislation, and are listed in Appendix 2 of the Convention on Trade in Endangered Species 1973.

Whales, dolphins Mysticeti, Odontoceti and dugong (*Dugong dugon*) occur in the area, although the total number of species of marine mammals is unknown. All are protected species.

The cays and continental islands of the area support 242 species of birds. These include 40 species of sea birds, of which 21 have breeding colonies within the area. Of the 202 species of land birds recorded, 109 have breeding sites recorded (derived from Kikkawa, 1976).

Some of the earliest research into the Great Barrier Reef took the form of ornithological expeditions, which recorded, amongst the larger sea birds, the reef heron (*Egretta sacra*), osprey (*Pandion haliaetus*), pelican (*Pelecanus conspicillatus*), frigate birds (*Fregata* sp.), and sea eagles Accipitridae, terns (*Sterna* sp.) and gulls (*Larus novaehollandiae*) and shearwaters (*Puffinus* sp.) are common.

(vii) *Algae*

The Great Barrier Reef supports a wide range of fleshy algae, many of which are small and inconspicuous but which are highly productive and heavily grazed by turtles, fish, molluscs and sea urchins. Calcareous algae play a key role in reef building. There are two major groups, Chlorophyta (green algae) and Rhodophyta (red algae) and a third less important group Phaeophyta (brown algae). The main calcareous genera of Rhodophyta are *Lithothamnion*, *Lithophyllum*, *Porolithon*, *Amphiroa* and *Amansia*. These genera have a closely textured skeletal structure and grow as encrustations and are thus largely responsible for the survival of the reef mass during severe and continuous wave attack. *Lithothamnion* and related forms are most common on the algal rim of a reef, but are less common on the middle and outer reef flat.

The genera of Chlorophyta, such as *Halimeda*, *Penicillus* and *Acetabularia* play a minor role in shielding the reef against wave attack, but are important in contributing to sediment. While *Halimeda* flourishes in almost every part of the reef, *Acetabularia* is restricted to the reef flat and *Penicillus* occurs only on the inner reef flat.

(viii) *Sea Grasses*

Sea grasses, while occurring throughout the Great Barrier Reef area, are rarely abundant, but are probably an important food source for grazing animals such as fish and turtles. In some of the inshore coastal areas, however, there are extensive seagrass beds which are important feeding grounds for the dugong.

## Cultural heritage

The Great Barrier Reef, and in particular, the northern sector, is important in the history and culture of the Aboriginal groups of the coastal areas of north-east Australia. The Great Barrier Reef has received little systematic archaeological study but it is known that there are large, important Aboriginal or Torres Strait Islander sites on a number of the islands. Some notable examples occur on Lizard and Hinchinbrook Islands, and on Stanley, Cliff and Clack Islands in the vicinity of Cape Melville (14°S) where there are spectacular galleries of rock paintings (Chase, 1978 and Beaton, 1978).

About thirty wrecks of historic importance are known to exist in the Great Barrier Reef area. One of the earliest, the wreck of HMS "Pandora" dates from 1791 and lies near the reef in the northern sector to which it gave its name. In the central sector is the well-preserved wreck of the coastal vessel SS "Yongala" which sank with the loss of 122 passengers and crew members during a cyclone in April 1911.

The hazards of navigation in the Great Barrier Reef resulted in the construction of a large number of lighthouses, some of which have particular historical importance. The Raine Island lighthouse, constructed by convict labour in 1844 under the direction of Captain Blackwood of HMS "Fly", is now derelict but has been listed by the National Trust of Queensland. The lighthouses at Lady Elliott Island (built in 1866) and North Reef Island (1878) still operate and are fine examples of nineteenth century riveted steel plate construction.

### 3. (d) History

#### (i) *Natural History*

The natural history of the Reef is a story of the life and death of living organisms and the deposition and sedimentation of their calcareous remains under the influence of oceanographic and geographical factors.

The development of the present structure of the Great Barrier Reef began approximately fifteen thousand years ago. Between that time and approximately six thousand years ago the sea level on the north-east Continental Shelf of Australia rose some 45 metres to the present levels.

Reefs developed as the rising sea level covered sites suitable for settlement and growth of corals and other organisms. In many cases such sites were low, weathered limestone hills, themselves the remains of reefs formed some millions of years previously.

The upward growth of reefs followed the rise in sea level and, depending on local factors such as the depth of the initial substrate and hydrological conditions, the tops of some reefs reached present sea level about six thousand years ago, others more recently and still others have yet to reach sea level.

A modern reef is thus typically a geological structure of ancient age upon which a veneer of living organisms overlies a layer of 1 to 5 metres of material derived from recent, rapid coral growth. The rich and varied living veneer extends from the surface to the depths where light levels become too low for active plant growth, usually about 40 metres. A reef thus provides the basis for a closely associated complex of ecosystems.

On some reefs, particularly platform reefs, cays have formed by the accumulation of sand, rubble or other material on the reef top by the interaction of wind, tidal currents and wave action.

Once a cay has been built up to a level where it remains exposed at extreme high water of spring tides, various species of sea birds use the rubble or sandbank as a resting area. With time, the resulting guano forms a thin layer of organic material, thus providing an area suitable for plant colonisation by saltwater resistant seeds which may drift to the island, be blown there by the wind, or be carried by birds. At first, the instability of the substrate and its highly saline and calcareous nature, prevent all but salt tolerant plants from surviving. Such plants, highly specialised and adapted for living in wind-blown conditions, are sub-

jected to continuous salt spray with little or no fresh water for considerable periods of the year. When a cay has developed to a sufficient size to prevent the loss of all freshwater to the open sea, a certain amount of freshwater will remain in the sand, floating on top of the saltwater below it, providing the basis for a more varied vegetation. The density and type of the vegetation on the various cays today depends almost entirely on their position relative to the high rainfall areas of the Reef area.

(ii) *Cultural History*

The Great Barrier Reef or parts of it have been explored by Australian Aboriginal fishermen since before the development of the present form of the Great Barrier Reef which began about 15,000 years ago.

Chase (1978), writing of the Aboriginal groups of the northern sector, records that they operated within a highly complex mosaic of marine environments which extended from the beachfront and estuarine margins outward to encompass sandbars, offshore islands and fringing reef systems. They possessed large outrigger canoes with single and double outriggers, which were capable of holding up to four adults. These canoes were paddled and were used as a hunting platform as well as a means of transport.

These beach peoples lived normally within a small territory throughout the year. Camps moved little more than a half-kilometre at a time. Reasons for such shifts were nearly always based on the need for a clean campsite or the occurrence of a particularly known seasonal abundance of food such as yams and crabs. Large gatherings were held at intervals of two to three years at well-established sites to carry out ceremonial activities and initiations of young men.

Evidence of exploration and exploitation of the Great Barrier Reef other than by Australian Aboriginals is fragmentary prior to the voyage of exploration by James Cook in 1770. Chinese, Portuguese and Spanish mariners are known to have explored Timor and other areas to the north of Australia in the fifteenth and sixteenth centuries. It is possible that such exploration extended to Australia. French maps of the mid-sixteenth century can be interpreted as delineating the north and east coasts of Australia. It has been suggested that those maps were drawn from information collected in a Portuguese voyage of 1522-24 led by Cristavao de Mendonca (McIntyre 1977).

In 1770 James Cook made a voyage of exploration up the east coast of Australia and entered the waters of the Great Barrier Reef. On 11 June 1770 his ship "Endeavour" ran aground on a reef, subsequently named Endeavour Reef. He was fortunate in the weather conditions, and with his skill as a seaman was able to get the ship off the reef and beach it for repairs near the mouth of what is now known as the Endeavour River at a site where Cooktown stands today. In preparing to pull his ship off the reef, Cook jettisoned his guns, iron and some ballast and other non-essential material. In early 1969, divers recovered Cook's cannon and some of the ballast, and in 1971, the anchor was also recovered. One of the cannons is now permanently displayed at the museum in Cooktown.

The difficulties of navigation through the Great Barrier Reef continued to take a toll of shipping and lives, and caused a number of remarkable voyages in small open boats. Thus, HMS "Pandora", a 24 gun frigate of the Royal Navy, was wrecked in 1791 while carrying, as prisoners, some of the seamen who had mutinied against Captain Bligh in the South Pacific some years previously. The survivors of the ship's crew and prisoners made a journey in open boats to Timor.

Cook's voyage was one of scientific exploration, and the Great Barrier Reef has been the subject of many subsequent voyages and expeditions of survey and exploration. These include Matthew Flinders in the "Investigator" 1802-03, Ferdinand Bauer and Robert Brown in the "Cato" and

"Porpoise" 1801-03, Phillip Parker King in the "Mermaid" and "Bathurst" 1819-21, Stokes, Wickham, Bynoe and others in the "Beagle" 1839-41, Blackwood, Jukes and MacGillivray in the "Fly" and the "Bramble" 1842-45, MacGillivray, Stanley and Huxley in the "Rattlesnake" 1847-49, Denham in the "Herald" 1853-61, Mosely and others in the "Challenger" 1874, Coppinger and Miers in the "Alert" 1881 and McFarlane in the "Constance" 1887. W. Saville-Kent, as the Commissioner for Fisheries to the Government of Queensland, systematically explored most parts of the Reef, and in 1893 published his historic book "The Great Barrier Reef", which includes the first photographs of the Reef's coral splendour.

More recent expeditions include the expedition led by Charles Hedley of the Australian Museum to Masthead Island in 1904, the Royal Australian Ornithological Expedition to North West Island in 1910, the Royal Zoological Society of New South Wales Expedition to North West Island in 1925, the Great Barrier Reef Committee Expeditions in 1926 to Michaelmas Cay and in 1937 to Heron Island to sink geological bore holes, the Royal Society of London Expedition of 1928-29 led by C. M. Yonge, whose members spent a year on Low Isles in 1928-29, the "Steers" Expedition which investigated the entire length of the Barrier Reef in 1937 and 1938, the 1954 Expedition which revisited Low Isles and the Royal Society and Universities of Queensland Expedition of 1973 led by D. R. Stoddart.

A number of cays including Raine, North West, Fairfax and Lady Elliott Islands were mined for guano or phosphate rock in the second half of the nineteenth century. The operations were considerable, involving substantial work forces (for example, there were 112 people on North West Island in 1897), and removed large quantities of topsoil and rock. It has been estimated that the operations on Lady Elliott Island resulted in the removal of a layer of material 2.5 metres thick from the island.

Beche de mer and trochus fisheries have operated periodically on the Great Barrier Reef and have at times been extensive and involved considerable work forces. Records for 1881 show that some 250 tonnes of dried beche de mer were exported.

Currently, people living in Aboriginal communities in the Great Barrier Reef area (Palm Island, Wujal Wujal, Hopevale, Cooktown and Lockhart River) have access to the marine and near shore resources which played an important role in the Aboriginal economy during the past several thousand years.

#### **4. (b) Agents responsible for preservation/conservation**

The *Great Barrier Reef Marine Park Act* 1975 and the responsibility of the Great Barrier Reef Marine Park Authority extend over the whole Great Barrier Reef up to Low Water Mark (L.W.M.). Responsibility above L.W.M. rests with the Queensland Fisheries Service and the Queensland National Parks and Wildlife Service. Addresses of the three agencies are:

**Great Barrier Reef Marine Park Authority**

The Chairman,  
Great Barrier Reef Marine Park Authority,  
P.O. Box 1379,  
TOWNSVILLE. QLD. 4810. AUSTRALIA

**Queensland National Parks and Wildlife Service**

The Director,  
Queensland National Parks and Wildlife Service,  
P.O. Box 190,  
NORTH QUAY. BRISBANE, QLD. 4001. AUSTRALIA

### Queensland Fisheries Service

The Director,  
Queensland Fisheries Service,  
P.O. Box 344,  
FORTITUDE VALLEY, QLD. 4006. AUSTRALIA

The Department of Primary Industry (Commonwealth) also has responsibility for conservation and management of fisheries in proclaimed waters beyond the 3-mile territorial sea in which the Reef is located, under the provisions of the *Fisheries Act 1952* (Commonwealth); and for the management and control of the exploitation of the living natural resources of the Continental Shelf, which are marine organisms belonging to sedentary species, including those whose natural habitat is on or adjacent to the Reef, under the *Continental Shelf (Living Natural Resources) Act 1968* (Commonwealth).

#### 4. (c) History of preservation/conservation

Specific conservation or preservation action taken includes the following:

1. National parks have been established by the Queensland Government on approximately 160 islands of the area under the *State Forests and National Parks Act 1903-1948* including parts of Green Island (1937) and Heron Island (1943), and under the *Forestry Act 1959-1976*, and under the *National Parks and Wildlife Act 1976*.
2. The *Fish and Oyster Act 1914* (Queensland) restricted the taking of coral in declared areas. Orders in Council declaring various parts of the Reef area were gazetted between 1933 and 1951. This Act was superseded by the *Fisheries Act 1957-1974* (Queensland) which again included such restrictions. In 1976 the *Fisheries Act 1976* (Queensland) repealed the *Fisheries Act 1957-1974*. The provisions of this latest Act are set out in 4(c) below.
3. Marine parks were gazetted in 1974 at two heavily used sites, Heron-Wistari Reef and Green Island Reef, under the *Forestry Act 1959-1976* (Queensland). Subsequently, control of these marine parks was transferred to the *Fisheries Act 1976* (Queensland). Except for recreational line fishing the taking of fishes, shells, coral, marine organisms, sand, etc., is prohibited. In some areas within these marine national parks all fishing is prohibited.
4. Commonwealth and Queensland legislation prohibits or restricts the taking of marine organisms. The legislation reviewed below is of varying application within the geographical area of the nomination.
  - (a) *Continental Shelf (Living Natural Resources) Act 1968* (as amended) — Commonwealth
    - complete prohibition on the taking of specified bivalves and gastropods (triton and helmet shells, and giant clams);
    - restrictions on the taking of trochus, green snail, beche de mer, and pearl shell; and
    - licensing of all extractive activities based on sedentary species undertaken by nationals or foreigners.
  - (b) *Whaling Act 1960* (as amended) and *Whale Protection Act 1980* — Commonwealth

The *Whaling Act 1960* empowers the Minister to prohibit or control, by means of a licensing and regulatory system, the taking of whales:

    - before 1979 —
      - complete prohibition on taking of right, humpback and blue whales and any female whales accompanied by a calf or suckling; and
      - restrictions on taking of fin, sei and sperm whales;
    - since 1979 the taking of any whale for commercial purposes has, in effect, been prohibited.

The *Whale Protection Act 1980*, when proclaimed, will repeal the *Whaling Act 1960*, and will prohibit, subject to certain limited exceptions, the killing, injuring or taking of any whale or interference with any whale.

"Whale" is defined as "any member of the sub-order Mysticeti or Odontoceti of the order Cetacea".

- (c) *Fisheries Act 1976* — Queensland
    - prohibition on taking of turtles, marine mammals, clams, helmet and triton shells;
    - restrictions on taking of pearl, pearl oysters, pearl shells, green snails, trochus, coral, shell grit, coral limestone and star sand;
    - size restrictions on some fish species; and
    - the prohibitions and restrictions do not apply to Aborigines or Torres Strait Islanders living on a reserve.
  - (d) *Fisheries Act 1952* (as amended) — Commonwealth
    - complete prohibition on the commercial taking of turtles and dugong;
    - prohibition on commercial spearfishing in certain areas;
    - restrictions on fishing in proclaimed waters; and
    - traditional fishing permitted in proclaimed waters.
  - (e) *Fauna Conservation Act 1974-1979*; and *Forestry Act 1959-1979* — Queensland
    - protection of all native fauna on islands of the Great Barrier Reef.
5. Since the declaration of the Australian Fishing Zone in 1979, substantial reduction in or control of longline fishing and clam fishing has occurred within the area.

Two specific perceived threats to the Reef have generated conservation action.

- (a) Mining and oil drilling. In 1971, all companies holding petroleum exploration permits in the Great Barrier Reef area voluntarily agreed to a suspension of their operations. At that time Royal Commissions were appointed by both the Commonwealth and Queensland Governments to investigate the issues raised by exploratory and possible production drilling for petroleum in the area of the Great Barrier Reef. The Royal Commissions reported in 1974 and subsequently the Commonwealth Government decided that there should be no further exploration for petroleum in the area until the results of both short and long-term research are known. It is the policy of the Commonwealth and Queensland Governments to prohibit any drilling on the Great Barrier Reef or any drilling or mining which could damage the Reef.
- (b) Crown of thorns starfish *Acanthaster planci*. Between 1965 and 1974 large populations of the coral-eating crown of thorns starfish *A. planci* caused considerable mortality amongst corals, particularly in the central sector. Concern that the populations might be the consequence of an ecological imbalance caused by human activity, and a desire to develop means of controlling the sporadic outbreaks of starfish populations, led to a series of inquiries and a major research program. Research into the possible causes of dense populations of crown of thorns starfish continues. Also, in the light of the recent recurrence of large starfish populations on reefs affected in the late 1960's, research into effective control measures has continued.

#### 4. (d) Means for preservation and conservation

*The Great Barrier Reef Marine Park Act 1975* provides for the establishment, control, care and development of a marine park in the Great Barrier Reef Region as defined in that Act. Areas of the Region may be declared as part of the Marine Park and subsequently zoned. The action of declaration has the effect that operations for the recovery of minerals are prohibited from being carried out within the area so declared, except for the purpose of research and investigations relevant to the establishment, care and development of the Marine Park, or for scientific research.

Each declared area will be designated as a particular section of the Marine Park and will be the subject of a specific zoning plan designed to provide for

partitioning of usage in accordance with the objects defined in the *Great Barrier Reef Marine Park Act 1975*. Provision is made in the Act for extensive public participation in the preparation of the zoning plan.

The Act requires that preparation of a zoning plan for a section of the Marine Park must take into account the following objects:

- “(a) the conservation of the Great Barrier Reef;
- (b) the regulation of the use of the Marine Park so as to protect the Great Barrier Reef while allowing the reasonable use of the Great Barrier Reef Region;
- (c) the regulation of activities that exploit the resources of the Great Barrier Reef Region so as to minimise the effect of those activities on the Great Barrier Reef;
- (d) the reservation of some areas of the Great Barrier Reef for its appreciation and enjoyment by the public; and
- (e) the preservation of some areas of the Great Barrier Reef in its natural state undisturbed by man except for the purposes of scientific research.”

In addition to the day-to-day management of Queensland national and marine parks referred to earlier, day-to-day management of sections of the Marine Park is to be undertaken by Queensland Government officers, who in discharging those responsibilities, will be subject to the Great Barrier Reef Marine Park Authority. In practice this will mean that day-to-day management is carried out by agencies such as the Queensland Fisheries Service and the Queensland National Parks and Wildlife Service within guidelines and in accordance with principles set by the Great Barrier Reef Marine Park Authority in consultation with the Queensland agencies. The jurisdiction of the Authority ends at low water mark on islands or on the mainland, except for islands owned by the Commonwealth of Australia. Most of the islands within the Region come under Queensland jurisdiction and the majority of these are national parks administered by the Queensland National Parks and Wildlife Service. The need for complementary management of islands and the surrounding marine environment is recognised by both the Commonwealth and Queensland Governments.

The Authority has about 40 staff and a budget of \$A2.1 m for the 1980/81 financial year. Funding for direct day-to-day management costs of the Capricornia Section, the first section of the Marine Park, is expected to begin in 1981/82. For the Section and for Queensland national and marine parks within the Section, the Commonwealth and Queensland Governments have agreed to share recurrent costs on a 50:50 basis. The Commonwealth Government will fund a three-year initial capital works program. Thereafter, capital works costs will be shared on a 50:50 basis.

A substantial portion of the Authority's budget is directed towards research and investigation for park management purposes and into information and education programs.

The Capricornia Section was proclaimed on 17 October 1979. Sequential declaration of further sections of the Great Barrier Reef Marine Park is expected to continue, with the Great Barrier Reef Region progressively coming under controlled management with the basic objects of conservation and preservation of the Reef. Declaration, zoning and management of the Marine Park will depend on a substantial and ongoing research and monitoring effort into the Great Barrier Reef ecosystem, human usage of the Region and the effect of human activities on the system.

#### **4. (e) Management plans**

The implementation of the zoning plan for each section of the Marine Park will be through management plans and guidelines established by the Authority in consultation with the Queensland Government which will be responsible for day-to-day administration. The plans and guidelines will include:

- (a) principles and standards for park management;

- (b) programs for surveillance, information, education, monitoring and enforcement;
- (c) provision for staffing, facilities, equipment, vessels and materials;
- (d) provision for appointment of inspectors to enforce regulations;
- (e) provision for appointment of well-trained, suitably qualified park personnel to undertake information, education, enforcement, technical and administrative support duties;
- (f) provision for visitor facilities on reefs and islands, e.g., mooring facilities, toilets, camping facilities, reef trails, reef walks;
- (g) emphasis on information and education programs to inform visitors and other users of the resources and unique features of the Marine Park and of the need for careful and responsible management; and
- (h) provision for extension services to train staff of commercial operators (e.g., tourist resort owners, charter boat operators) in conservation and education techniques.

Apart from specific management plans for the Capricornia Section, other activities are directed towards conservation of the Reef. The Authority has a commitment to a substantial information program directed to the general public as well as specific interest groups. The aims of the program are to publicise and inform the public of the Authority's functions, the purpose behind the establishment of sections of the Great Barrier Reef Marine Park and the overall need for responsible management of the Great Barrier Reef through conservation and reasonable use.

In addition the Commonwealth Government has accorded research on the Great Barrier Reef the highest priority in its marine science research program and has made arrangements for its co-ordination. The major elements of the Reef research program are being carried out by the following organisations:

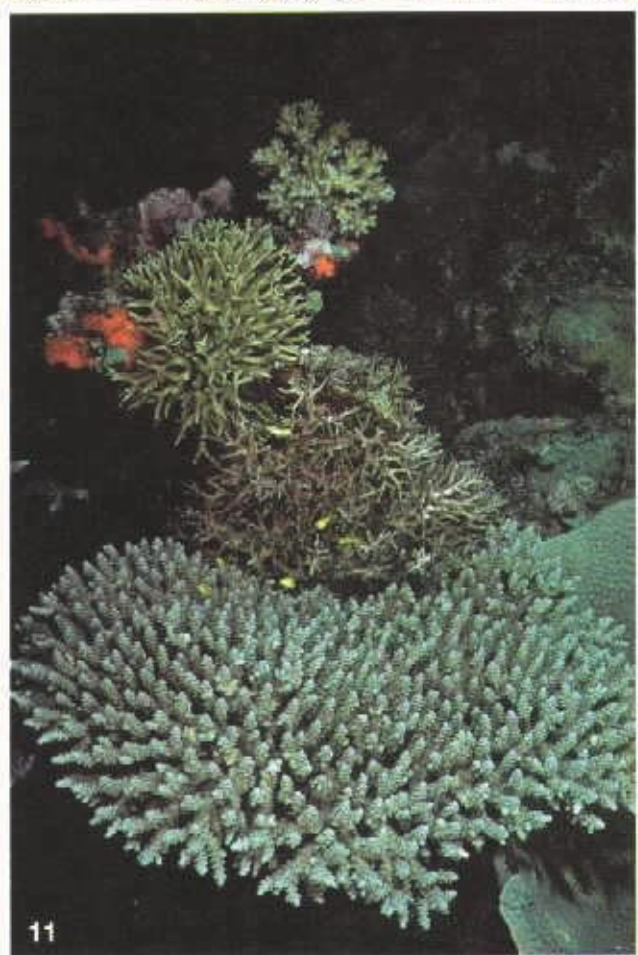
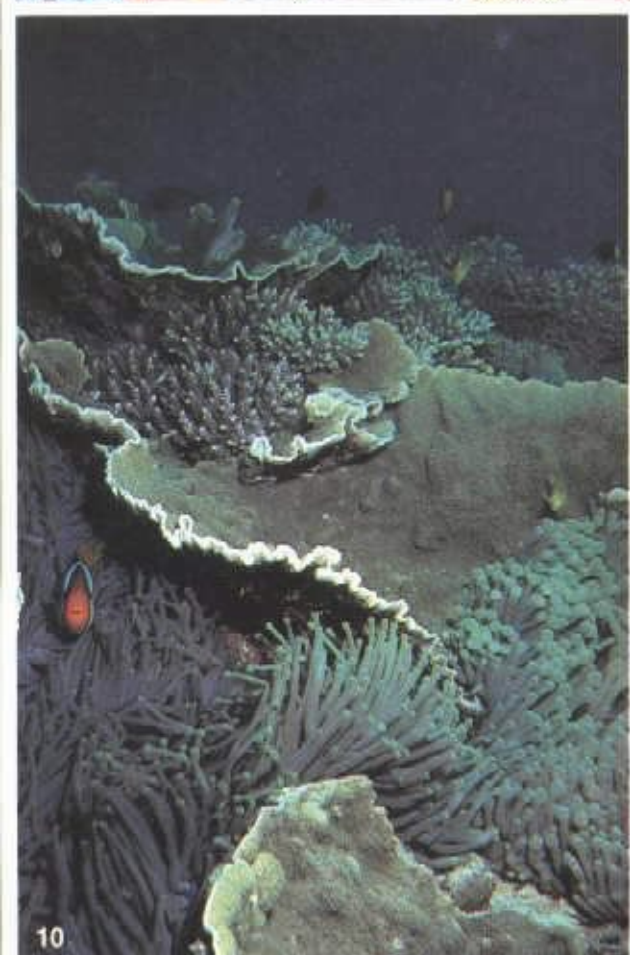
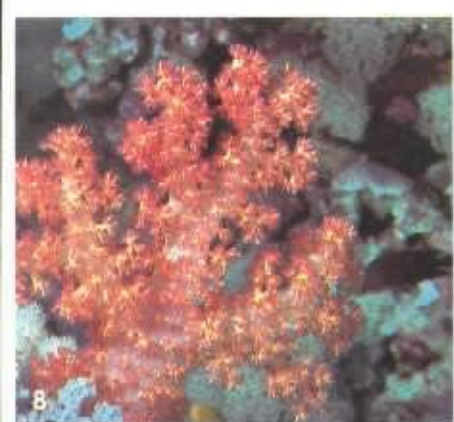
- the Australian Institute of Marine Science is concerned primarily in studying the key environmental and ecosystem processes of the Reef;
- the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is concerned primarily with the physical oceanography of the waters adjoining the Reef;
- the Bureau of Mineral Resources carries out research into the geological evolution of the Reef; and
- the Great Barrier Reef Marine Park Authority arranges for research and investigations relevant to its management responsibilities and socio-economic studies and macro-resource surveys for which no other institution is equipped. It reports regularly to the Great Barrier Reef Ministerial Council on the progress of research in the Region.

The Funding Advisory Panel of the Australian Marine Sciences and Technologies Advisory Committee advises on the allocation of special grants for marine research including scientific investigation of the Reef ecosystem.

The Government has recently approved grants totalling about \$A1 million for 1980/81 for projects involving research on the Reef. These funds are additional to those provided to CSIRO, the Australian Institute of Marine Science and the Great Barrier Reef Marine Park Authority. The aim of many of the projects is to promote understanding of the Reef's ecosystem. Studies will include examinations of the history and evolution of the Reef, the biological communities of importance and ocean circulation and pollutants.

Research relevant to the conservation and management of the Reef is also undertaken by agencies of the Queensland Government, particularly the Queensland Fisheries Service and the Queensland National Parks and Wildlife Service, and by tertiary institutions.





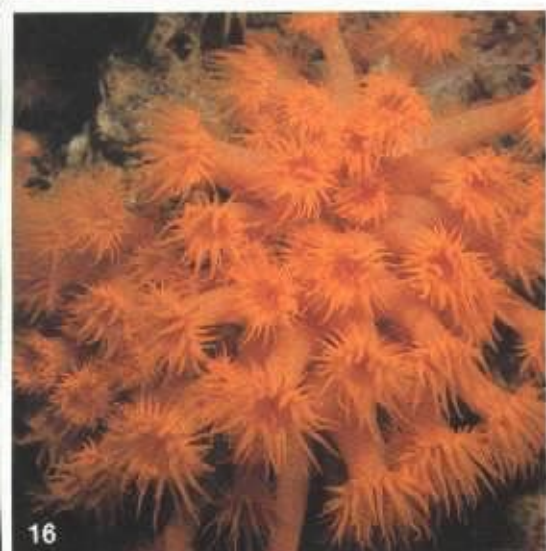




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Plate 8 Delicate polyps of a soft coral (*Dendronephthya* sp.)

Plate 9 Hard turret coral with polyps retracted (*Tubastrea* sp.)

Plate 10 Anemone fish (*Amphiprion akindynos*) amongst the tentacles of its host anemone

Plate 11 Needle corals (*Seriatopora* sp.) and stunted staghorn coral (*Acropora* sp.)

Plate 12 Staghorn coral (*Acropora* sp.) with polyps partially expanded

Plate 13 A soft coral (*Xenia elongata*)

Plate 14 Exposed mantle of clam (*Tridacna* sp.)

Plate 15 Underwater canyon

Plate 16 Hard turret coral polyps extended for feeding (*Tubastrea* sp.)

Plate 17 A fragment of the reef ecosystem

Plate 18 Large (*Porites*) coral head amongst plate corals





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Plate 19 School of sweetlip (*Plectropomus chrysostomus*)

Plate 20 Crown or anemone fish (*Amphiprion perideraion*) hovering above its yellow eggs

Plate 21 Hawkfish (*Cirrhitichthys* sp.)

Plate 22 A shoal of blue damselfish

Plate 23 A mixed group of fish including surgeon fish (*Acanthurus dussumieri*) and trumpetfish (*Aulostomus chinensis*)

Plate 24 White-lined rock cod (*Amyperodon leucogrammicus*)

Plate 25 Harlequin tusk fish (*Liopordella fasciata*)

Plate 26 Pair of dusky butterflyfish (*Chaetodon flavirostris*)

Plate 27 Lionfish or butterfly cod (*Pterois volitans*)

Plate 28 Blackbacked butterflyfish (*Chaetodon ephippium*)

Plate 29 Featherfin bullfish (*Heniochus acuminatus*)



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## APPENDIX TWO

### Joint press release by the Prime Minister of Australia and the Premier of Queensland, 14 June 1979

#### GREAT BARRIER REEF

The Prime Minister, Mr Malcolm Fraser and the Premier, Mr Joh Bjelke-Petersen, conferred today on the future consultative arrangements for joint consideration of recommendations of the Great Barrier Reef Marine Park Authority. This Authority is established by the Commonwealth Great Barrier Reef Marine Park Act, which will continue unchanged.

The Great Barrier Reef Marine Park Authority is designed to provide for the progressive declarations and oversight of Marine Parks in the Region of the Great Barrier Reef. The boundaries of this Region will remain as defined in the Commonwealth legislation.

No provision has to date been made for both governments to co-ordinate policy at the ministerial level. Accordingly, it was agreed at today's meeting to establish a Ministerial Council comprising Commonwealth and State Ministers particularly representing marine park, conservation, science and tourism.

The Commonwealth Ministers will be Phillip Lynch, the Minister for Industry and Commerce, whose portfolio responsibilities include tourism — a major activity in the area of the Great Barrier Reef — and Senator Webster, the Minister for Science and the Environment who is directly responsible for the Great Barrier Reef Marine Park Authority.

The Queensland Ministers will be Mr Newberry, the Minister for Culture, National Parks and Recreation, and Mr Hodges, the Minister for Maritime Services and Tourism.

Mr Fraser and Mr Bjelke-Petersen agreed that the first section of the Great Barrier Reef Marine Park — the Capricornia Section — should be processed by the Ministerial Council as an immediate task to enable early proclamation to take place.

They also agreed that as the sections of the Great Barrier Reef Marine Park are proclaimed, the day-to-day management should be undertaken by officers of the Queensland National Parks and Wildlife Service, who, in discharging these responsibilities, will be subject to the Great Barrier Reef Marine Park Authority. The Authority will continue to have the responsibility for:

- recommending the declaration of Parks;
- developing zoning plans and plans of management of Parks; and
- arranging for research and investigation relevant to Marine Parks.

In relation to the Territorial sea, the Premier and the Prime Minister agreed that the arrangements with Queensland which will flow from the agreements of the June 1978 Premiers' Conference will be on the same basis as arrangements to be entered into in respect of other States, but with full regard to the Great Barrier Reef Marine Park Act and to the Prime Minister's Parliamentary Statement of 4 June on Petroleum Exploration in the Great Barrier Reef.

Both the Premier and the Prime Minister confirmed that it was the policies of their respective governments to prohibit any drilling on the Reef or any drilling or mining which could damage the Reef.

Mr Bjelke-Petersen and Mr Fraser agreed that the program of short and longer term research into the Great Barrier Reef eco-system referred to in that Statement will be monitored by the Ministerial Council, and will be closely supervised by the Marine Park Authority.

By creating an appropriate consultative mechanism these arrangements will serve to ensure that the Authority functions within the framework of the joint policies of the Commonwealth and Queensland Governments as they further develop.

The two Governments will be consulting forthwith on implementation of these arrangements.

Both the Premier and the Prime Minister affirmed that the basic policy intention of both governments was to ensure that the Great Barrier Reef area be recognised and preserved as an important feature of Queensland's and Australia's heritage.

## APPENDIX THREE

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Plate 30 A polybranch (*Cyerce nigra*), on turtle weed (*Chlorodesmis*)

Plate 31 Crown of thorns starfish (*Acanthaster planci*) feeding on staghorn coral (*Acropora robusta*)

Plate 32 A yellow tube sponge, Hardy Reef

Plate 33 A green turtle hatchling (*Chelonia mydas*)

Plate 34 The leathery gills of tube worms (*Spirobranchus* sp.)

Plate 35 Two Gastropod molluscs (*Haminoea cymbalum*)



## APPENDIX FOUR

### Bibliography of the Great Barrier Reef

#### Items not included in Frankel

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