

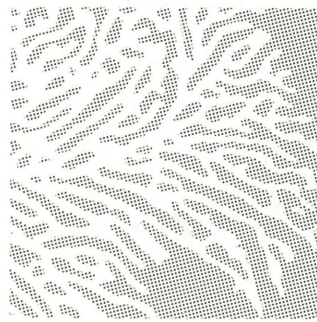
ANNUAL
REPORT



Great Barrier Reef
Marine Park
Authority

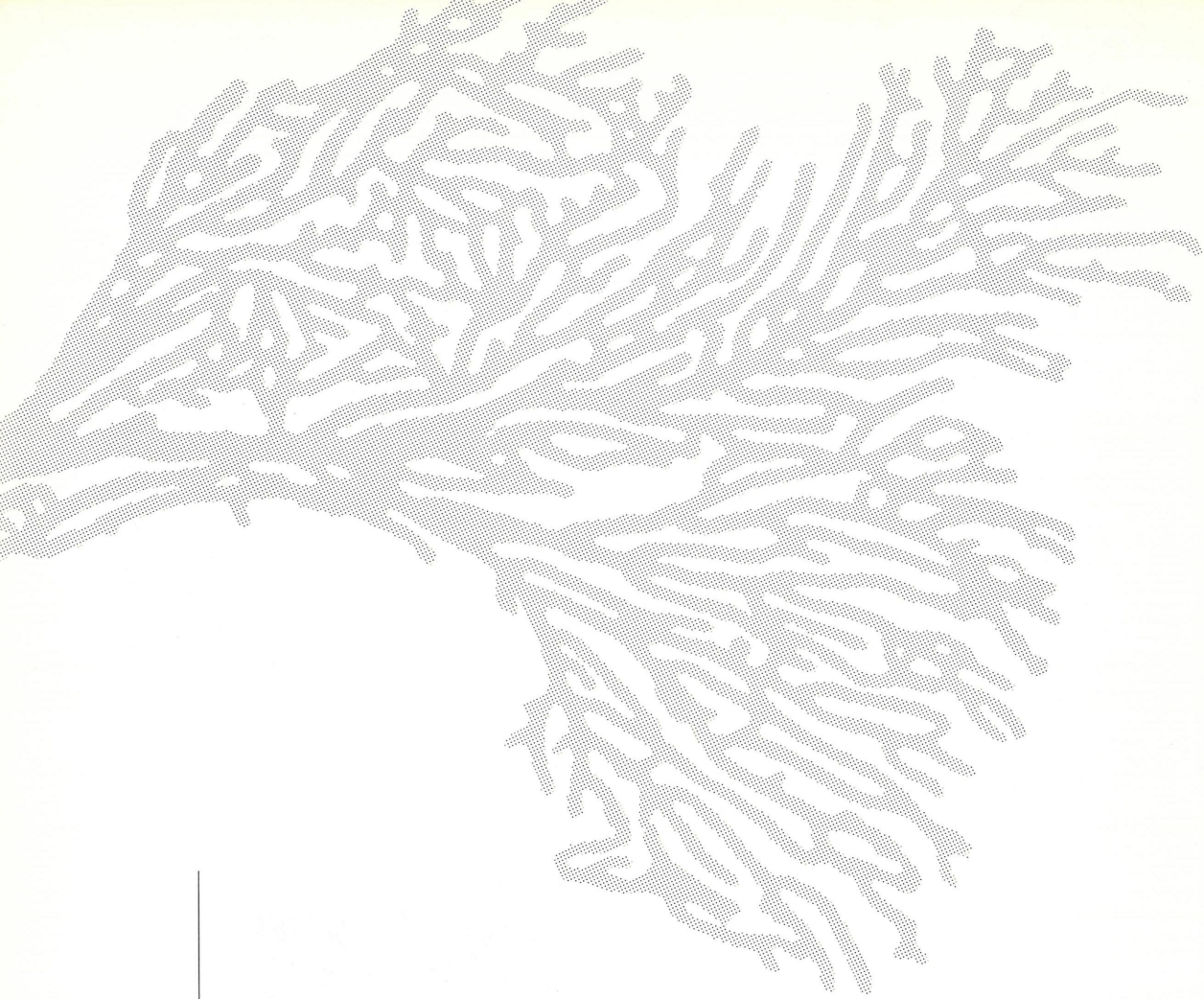
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Great Barrier Reef Marine Park Authority
PO Box 1379 Townsville Qld 4810
Street Address: 2-68 Flinders Street
Telephone: (077) 81 8811
Fax: (077) 72 6093

December 1991

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Great Barrier Reef Marine Park Authority
PO Box 1379 Townsville Qld 4810

The Hon Ros Kelly
Minister for the Arts,
Sport, the Environment,
Tourism and Territories
Parliament House
CANBERRA ACT 2600

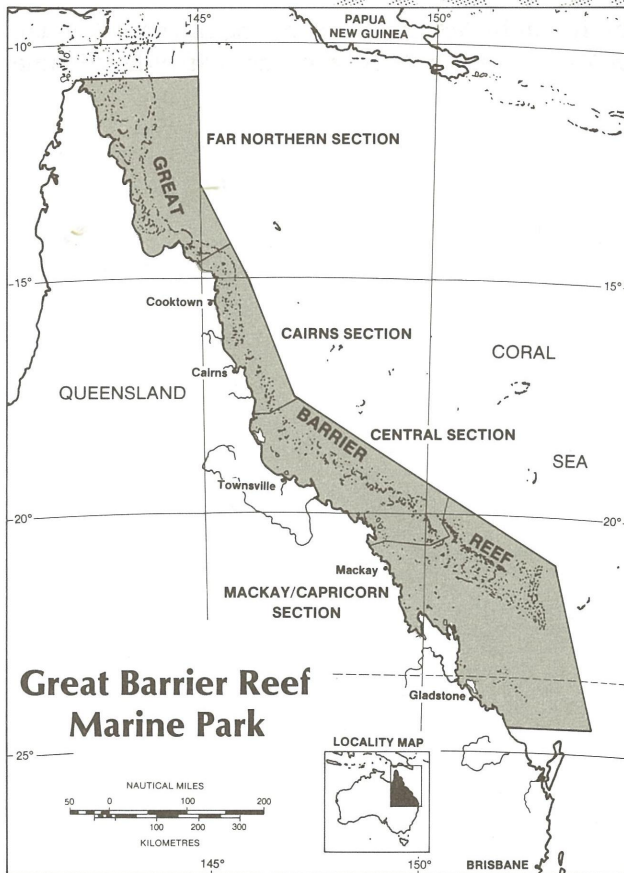
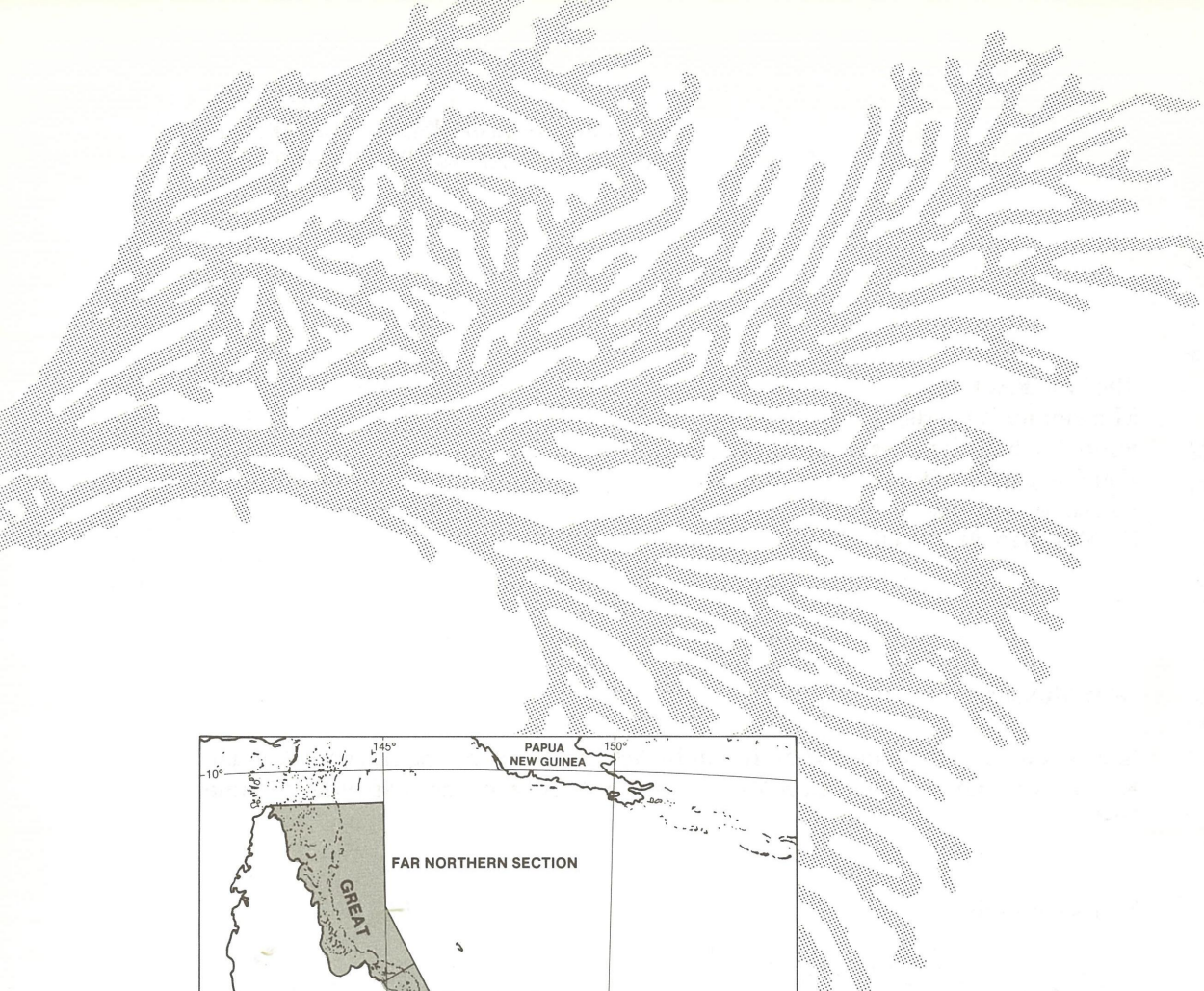
Dear Minister

In accordance with section 63 of the Audit Act 1901, I submit the fifteenth Annual Report of the Great Barrier Reef Marine Park Authority for the year ended 30 June 1991.

Yours sincerely

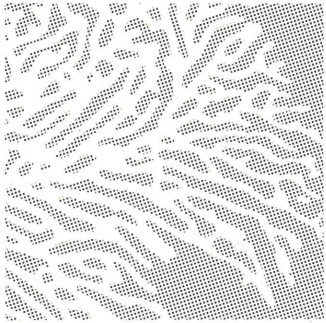
A handwritten signature in cursive script, appearing to read 'Graeme Kelleher', with a long horizontal flourish extending to the right.

Graeme Kelleher
Chairman



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FROM THE CHAIRMAN

The Great Barrier Reef Marine Park is the only large marine ecosystem in the world which is comprehensively managed with the explicit goal of ensuring that its use is ecologically sustainable in perpetuity.

As managers, we are acutely aware that our scientific knowledge is insufficient for us to be certain that our goal is being achieved.

There are three major questions which remain unanswered. One of them — the causes of crown-of-thorns starfish infestations — has been extensively studied over the past few years. Those studies continue. An enormous amount has been learned in these studies, not only about the starfish, but also about the processes, states and other living organisms which constitute the Great Barrier Reef.

The other two questions — the effects of nutrients and suspended sediments on the Reef and the long-term impact on the ecosystem of fishing — have not been studied adequately and cannot be unless significantly more resources are provided. We have designed the study programs, using the most expert scientists from Australia and overseas. Additional funding has been requested for each study in the hope of answering these two fundamental questions in the next decade.*

COMPULSORY PILOTAGE

During the year, the International Maritime Organisation declared the Great Barrier Reef as the world's first marine Particularly Sensitive Area. This declaration was achieved through the combined efforts of several Commonwealth agencies, particularly the Department of Transport and Communications, the Department of Foreign Affairs and Trade and this Authority.

The declaration expressed formally the support of the international maritime community for special measures to be taken to protect the Great Barrier Reef. In the future, the declaration will be the foundation for further actions by the Australian Government to protect the Reef from risks associated with maritime activities.

The first such action is the passage through the Commonwealth Parliament of the Great Barrier Reef Marine Park Amendment Bill 1991. This legislation will make it compulsory for any vessel longer than 70 metres or any vessel carrying oil or toxic cargo to carry a pilot when navigating in the northern part of the Reef or in Hydrographer's Passage.

*In the 1991-92 Budget, \$1 million was provided for the first year of each of these two study programs.

The second action is the great increase in penalties under the amendment to the *Protection of the Sea (Prevention of Pollution) Act 1983* (penalties up to \$1million) for the deliberate discharge of oil in the Great Barrier Reef.

We see these actions as significant elements in the program of ecologically sustainable development to which the Australian Government has committed itself.

ZONING

Zoning is the primary means by which the Authority manages the Great Barrier Reef. We have a policy of rezoning each of the four sections of the Great Barrier Reef Marine Park every five years or so in order to reflect changing use patterns and increasing scientific understanding of the Great Barrier Reef.

During the year we completed the revision of the zoning of the Cairns Section. The major changes proposed from the existing zoning plan included the introduction of a 'no structures' sub-zone. The sub-zone provides a guarantee to the public that the whole of the Great Barrier Reef will not become saturated with structures and that a high proportion of the Marine Park will remain in a pristine condition.

What have we learned from this rezoning exercise? Perhaps the most surprising lesson to those who are not familiar with the way a zoning plan is produced is that the process becomes more difficult with time, rather than easier. There are several reasons for this. One of them is that the parties to the zoning plan process — usually the representatives of major user groups — become more expert at applying pressure to the Authority in order to achieve their objectives. Another is that, as the intensity of use of the marine park increases, conflict between different user groups increases and competition for scarce resources leads to voluntary acceptance of restrictions on activity becoming less common. We expect the revised zoning plan for the Cairns Section to be tabled in the Commonwealth Parliament in the near future and, provided a motion for disallowance is not passed in either House, for the zoning plan to come into effect late in 1991.

THE USER-PAYS PHILOSOPHY

The user-pays philosophy has been adopted by many countries and international organisations. Briefly, the philosophy is that people who use a publicly-owned resource should pay for that use. A corollary of the user-pays philosophy is the polluter-pays principle. This principle states that the beneficiary of a use which causes pollution should pay for the cost to the community of that pollution.

Applications of these two principles has led the Great Barrier Reef Ministerial Council to ask the Authority to investigate the introduction of a user-pays system in the marine park. We have been exploring the introduction of this system in close consultation with representatives of the tourism industry and with others. It would be naive to expect anyone to be enthusiastic about paying extra money to a government agency, for almost any purpose. Subject

to this caveat we have been pleased with the degree of cooperation we have met in the discussions.

The introduction of a user-pays system can have benefits. One of them is the development of an increased sense of ownership and responsibility within the commercial users of the marine park. Another is that, as governments move to reduce taxation rates, additional resources can be provided to allow competent management of common property resources such as the Great Barrier Reef. A third is the application of additional discipline on management agencies, through the involvement of people paying under a user-pays scheme in the decision-making process about how funds are to be expended. No doubt this discipline will make the Authority's job harder, but it is a challenge which we welcome.

RESEARCH PRIORITIES

The Authority focuses all of the research which it funds on understanding those particular processes that are seen as being vital to maintaining the natural qualities of the Great Barrier Reef and on assessing the effect of human activity in quantitative terms. As well, we do all that we can to convince other research agencies operating on funds other than from this Authority to carry out research relevant to management. At present we have no comprehensive, integrated monitoring program covering the whole Great Barrier Reef. We have been working towards this, sometimes in association with other institutions, and intend to make this the highest priority in the next few years.

The crown-of-thorns starfish research program has revealed that the two infestations that have been closely monitored — one starting in about 1962 and the other in about 1979 — both had their genesis in the area just north of Cairns. These two episodes then followed the same course, with successive generations of the starfish springing up on reefs that are further south than the reefs on which the parents developed. This 'southward wave' of crown-of-thorns infestation was first hypothesised by one of the Authority's scientists — Richard Kenchington — in the 1970s. It has now been confirmed by observation. The obvious question is, what are the parameters that have led both of two closely observed infestations to start just north of Cairns? In the next year the crown-of-thorns study will focus on this area, with the intention of building up a clear knowledge of the water quality and other parameters that operate there.

COMMUNICATION AND INFORMATION

From the inception of the Authority, we have always realised that success in managing the Great Barrier Reef will depend on us communicating with the public in both directions. The public holds much knowledge that is not available in formal information systems. Further, the public's commitment to protecting the Great Barrier Reef depends strongly on them feeling involved in its management.

The Aquarium in Townsville is a vital part of the Authority's communications and information program. It has won many awards. It is the only aquarium in the world containing a large, complete coral reef ecosystem. Unlike nearly

every other aquarium in Australia and other parts of the world, this aquarium is not merely a collection of unrelated fishes swimming around in comparatively sterile water conditions. Rather, it contains all the elements of the Great Barrier Reef including photosynthetic algae, corals, sponges, as well as hundreds of species of fishes.

We are very proud of the work of the volunteers in the Aquarium. These dedicated, unpaid Townsville citizens have taken over most of the guide work in the Aquarium. In the process they have done much to educate the public about the Great Barrier Reef and have enriched the lives of visitors as well as their own.

This year we have introduced a series of short television adds dealing with anchoring on the reef, the avoidance of littering, and a request to recreational fishermen to take only as many fish as they need, rather than trying to pay for the trip from the proceeds from the catch. The reason for the latter advertisement is the observation that the total catch by recreational fishermen has diminished by almost 50% in the last few years while the total amount of effort devoted to catching fish has increased by about 30%. This is the classic pattern shown by fisheries that are being over exploited. We are working with the fisheries management agencies to determine which fisheries management measures on top of the education campaign should be applied in order to limit recreational fishing pressure.

The Commonwealth portfolio of the Arts, Sport, the Environment, Tourism and Territories, of which the Authority is a part is, at the request of our Minister, increasing its emphasis on public education. We are very pleased with this development and look forward to the challenge of communicating around Australia some of the things we have learned about marine conservation.

OPERATION OF THE ADMINISTRATIVE APPEALS TRIBUNAL (AAT) ACT

During the year, an appeal was lodged against the Authority's decision not to grant a permit to Dallhold Nickel Management Pty Ltd to construct an offshore unloading facility to transfer overseas nickel ore to the Yabulu Nickel Refinery just north of Townsville. This is the second time this Authority has been involved in the AAT review process. In brief, we can say that we do not believe that the process is suitable for the resolution of one-off natural resource management decisions.

The process is extremely legalistic and operates virtually as a court. It seems to us that the amount of resources absorbed by all parties in the process is unjustifiable - the total cost to the Authority of an appeal exceeds the cost of making a complete zoning plan.

We hope that there will be revision of the system to make it more efficient in the use of both time and human resources, without detracting significantly from the merit of any decision.

EXTERNAL ADVISORY SERVICES SECTION

Dan Claasen has been appointed as the first officer in our External Advisory Services Section. The establishment of this section reflects the many requests that the Authority receives to help people in Australia and in other countries study and manage marine systems. We are currently working with Indonesia and Belize and have assisted the Governments of Malaysia and Vanuatu in various natural resource programs.

In 1987 the IUCN, the World Conservation Union, resolved to establish a global representative system of marine protected areas. As Vice-Chairman (Marine) of IUCN's Commission on National Parks and Protected Areas it is my responsibility to coordinate this program. We have started by setting up working groups in each of the thirteen major biogeographic regions of the world's seas. The function of each working group is to identify gaps in the representation of the world's coastal marine biogeographic zones in marine protected areas and to propose new marine protected areas to include those zones.

At the IUCN General Assembly in November 1990, the Prime Minister announced the intention of his Government to work with States and Territories towards the creation of a National Representative System of Marine Protected Areas. Recognising the limitations on resources, this task at the Commonwealth level is shared between this Authority and the Australian National Parks and Wildlife Service (ANPWS). The Authority will be the primary contact with the Governments of Queensland, Northern Territory and Western Australia and ANPWS with the other governments of Australia.

Our aim is to rely to the maximum extent practicable on the expertise and resources of the States and Territories. All of our experience shows that success in such programs in Australia depends greatly on there being no perceived attempts by the Commonwealth to take over state functions. This national system will form a component of the International System of Marine Protected Areas.

DAY-TO-DAY MANAGEMENT

The relationship between this Authority and the Queensland National Parks and Wildlife Service (Q.NPWS), which is responsible to the Authority for day-to-day management of the Marine Park, has been rightly held up as a model of interagency cooperation. From very good foundations, relations continue to improve, helped greatly by joint planning exercises and open communication between all levels of both organisations.

CORPORATE PLAN

This year we have produced a corporate plan for the organisation. We already have developed in previous years the major elements of such a plan. They are incorporated in the statement of our goal and aims, our three-year-rolling program and our annual program. The merits of a formal corporate plan is that it forces us to integrate these various elements and to reconsider in a formal way our processes and priorities.

As with all of our programs, the staff have been fully involved in the development of our corporate plan.

Our ultimate aim is to make every employee of the Authority feel personally responsible for the well-being of the agency, for its reputation and its efficiency. Elements in our program to achieve this aim include an annual self-appraisal by every staff member and a formal personal development program. These are vital elements, but we recognise that the primary necessity is for every staff member to feel that the Authority is doing a worthwhile job and is doing it as efficiently as practicable.

I am personally very proud of the dedication, competence and humanity of the people with whom I work in the Authority.

GREAT BARRIER REEF MARINE PARK AUTHORITY

The Great Barrier Reef Marine Park Authority, which was established under the *Great Barrier Reef Marine Park Act 1975*, is a Commonwealth statutory body consisting of a full-time Chairman and two part-time members, one of whom is nominated by the Queensland Government.

The first appointments to the Authority were made in July 1976 and the Authority's first meeting was held in August that year.

ROLE

The Authority is the principal advisor to the Commonwealth Government on the care and development of the the Great Barrier Reef Marine Park. Specific functions defined in sections 7 and 7A of the Act are listed in Appendix A.

Below is the statement of the Authority's goal and aims. The statement has been derived from, and is consistent with, the object of and the functions and powers set out in the Act. It includes a new aim that recognises staff as the most important asset of the Authority.*

GOAL

To provide for the protection, wise use, understanding and enjoyment of the Great Barrier Reef in perpetuity through the care and development of the Great Barrier Reef Marine Park.

AIMS

These aims are subordinate to the primary goal and must be read in conjunction with it and with each other.

- To protect the natural qualities of the Great Barrier Reef, while providing for reasonable use of the Reef Region.
- To involve the community meaningfully in the care and development of the Marine Park.
- To achieve competence and fairness in the care and development of the Marine Park through the conduct of research, and the deliberate acquisition, use and dissemination of relevant information from research and other sources.
- To provide for economic development consistent with meeting the goal and other aims of the Authority.
- To achieve management of the Marine Park primarily through the

* A 10th aim was adopted by the Authority in October 1991:

- To make the Authority's expertise available nationally and internationally.

This aim was added subsequent to the end of the financial year in recognition of the functions of the Authority under S.7A of the Great Barrier Reef Marine Park Act.

community's commitment to the protection of the Great Barrier Reef and its understanding and acceptance of the provisions of zoning, regulations and management practices.

- To minimise costs of caring for and developing the Marine Park consistent with meeting the goal and other aims of the Authority.
- To minimise regulation of, and interference in, human activities, consistent with meeting the goal and other aims of the Authority.
- To achieve its goal and other aims by employing people of high calibre, assisting them to reach full potential, providing a rewarding, useful and caring work environment, and encouraging them to pursue relevant training and development opportunities.
- To adapt actively the Marine Park and the operations of the Authority to changing circumstances.

SUBSIDIARIES

The Great Barrier Reef Marine Park Authority has no subsidiaries. However certain functions are carried out in conjunction with other State and Commonwealth organisations such as the Queensland National Parks and Wildlife Service which has responsibility for day-to-day management of the Marine Park subject to the Authority. Certain powers of the Authority have been delegated to positions in these organisations.



Mr Graeme Kelleher, AM

Professor Rhondda Jones

Mr Noel Dawson

MEMBERSHIP AS AT 30 JUNE 1991

The full-time Chairman (and chief executive) of the Authority is **Mr Graeme Kelleher, AM**, who was reappointed for his third five-year term on 20 December 1989. Mr Kelleher has had extensive experience in activities concerned with the environment. He was one of the three commissioners on the Ranger Uranium Environmental Inquiry and served as an examiner of New Zealand's environment policies for the International Organisation for Economic Co-operation and Development (OECD). He is Vice-Chairman, Marine, of the Commission on National Parks and Protected Areas (CNPPA) of IUCN, the World Conservation Union.

Mr Noel Dawson was appointed, as the Queensland nominee, on 15 February 1990 as acting part-time member, for a period of six months. He was appointed as acting member for a further two terms during the course of 1990-91: 29 August to 31 December and 29 January to 30 June. Mr Dawson is

Director of the Queensland National Parks and Wildlife Service within the Queensland Department of Environment and Heritage (QDEH).

Professor Rhondda Jones was appointed on 22 February 1989, for a 3-year term as part-time member. Professor Jones, an ecologist with research interests in population dynamics, is Professor of Zoology in the School of Biological Sciences at the James Cook University of North Queensland (JCU).

On 26 June 1991, the Minister appointed Dr Craig Emerson, Director-General of the Queensland Department of Environment and Heritage, as acting part-time member, in place of Mr Dawson, for a one-month term commencing 1 July 1991.

ACTING CHAIRMAN APPOINTMENTS

This year, Mr Kelleher participated, at no cost to the Authority, in international activities for 10 days in September 1990 and for 5 days in June 1991.

In September, he addressed an international seminar in Sweden on the protection of sensitive sea areas and attended a planning meeting in Switzerland for the 18th General Assembly of IUCN (held in Perth, November 1990). In June he attended a Steering Committee meeting of IUCN in London.

The Minister appointed the Authority's Executive Officer, Dr Don Kinsey, to act as Chairman during the first absence, commencing 23 September 1990.

MEETINGS

During 1990-91, the Authority met on ten occasions:

1990		1991	
DATE	LOCATION	DATE	LOCATION
23 & 24 July	Brisbane	4 & 5 February	Lady Elliott Is.
10 August	Cairns	28 February	Brisbane
5 September	Great Keppel Is.	19 April	Townsville
14 September	Brisbane	19 & 21 June	Townsville
23 October	Cairns		
13 December	Townsville		

Marine Parks management is focused on the three operational Regions of the Queensland National Parks and Wildlife Service adjacent to the Great Barrier Reef Marine Park. The Authority met in each of the three Regions and these meetings involved the respective Regional Directors.

During the course of the year, the Authority finalised its review of the Cairns Section Zoning Plan. Other meeting business of particular significance concerned:

- consequences for day-to-day management arrangements of the continuing reorganisation within the Queensland Government's environment portfolio
- progress with the review of staffing and procedures for day-to-day management, by Professor Alistair Gilmour, Macquarie Park Research Ltd

- development of a corporate plan
- consideration of Marine Parks annual programs for the Authority (Commonwealth-funded), for day-to-day management (joint-funded with Queensland) and for Queensland maritime conservation (Queensland-funded) in a coordinated and integrated manner
- charging in the Marine Park, including permit assessment fees and possible concessions systems
- the installation of moorings in the Marine Park and implications for the Authority's liability
- refusal of permission for the establishment and operation of an anchorage for the offloading of nickel ore in Halifax Bay, Central Section
- legal action in regard to the operation of Sunlover Cruises to Green Island, Cairns Section
- policies on permit-issuing arrangements and on permit requirements for research and for education activities
- the aerial surveillance program, patrol vessel acquisition and patrols under Operation Barrier Protection
- management planning for, and arrangements to establish Reef Appreciation, Special Management and Replenishment Areas at sites in the Central and Cairns Sections
- unexploded ordnance in waters of the Great Barrier Reef Region
- the need for research into the effects of nutrients and turbidity and into the effects of fishing in the Marine Park
- a program to control waste discharge into the Marine Park
- the establishment of an external advisory section in the Office of the Authority
- adoption of an Equal Employment Opportunity program, an Aboriginal and Torres Strait Islander employment and liaison strategy and an occupational rehabilitation policy
- the Authority's involvement in the development of a National representative system of marine protected areas.

In keeping with the requirements under section 16A of the Act, members of the Authority have disclosed their direct and indirect pecuniary interests to a meeting of the Authority and have noted the obligations attached to their declarations.

In 1990-91, the Authority delegated powers under the Great Barrier Reef Marine Park Regulations relating to permits to offices of the Authority and of Queensland National Parks and Wildlife Service, Queensland Department of Environment and Heritage.

THE MINISTER

Since March 1990, **the Honourable Ros Kelly, MP** has been the Minister with portfolio responsibilities for Great Barrier Reef matters, as Minister for the

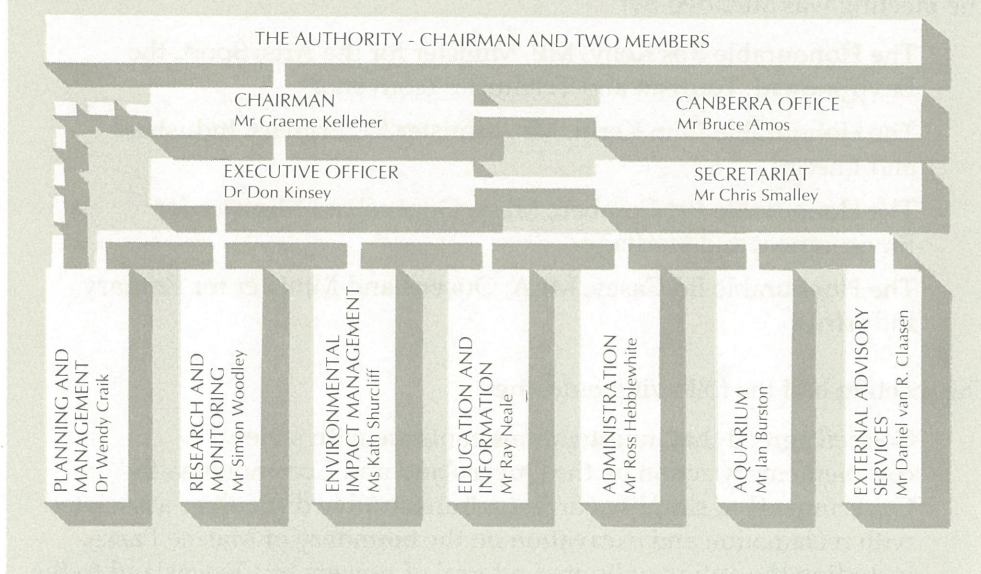
Arts, Sport, the Environment, Tourism and Territories. The Minister convened two meetings of the Great Barrier Reef Ministerial Council, held in Cairns on 10 August 1990 and in Brisbane on 28 February 1991.

The Act provides that the Authority 'Shall perform its functions in accordance with any general directions given by the Minister not inconsistent with this Act'. No such directions were given to the Authority during the year.

OFFICE OF THE AUTHORITY

The Authority has an office in Townsville and a small office in Canberra. This arrangement enables the Authority to have its principal technical resources close to the Reef and also to carry out important liaison functions in Canberra. The Townsville office, which includes the Great Barrier Reef Aquarium, had a staffing level at 30 June 1991 of 102.51 full-time-equivalents. The Townsville office is located in the Great Barrier Reef Wonderland complex.

**Figure 1. OPERATIONAL STRUCTURE AND SENIOR OFFICERS
AT 30 JUNE 1991**



The Canberra office provides administrative support to the Chairman and the secretariat for the Great Barrier Reef Ministerial Council. It also advises the Minister, liaises with the Department of the Arts, Sport, the Environment, Tourism and Territories, Parliamentary Committees, other Canberra-based Departments and organisations with interests in the Marine Park, and assists in the development and communication of policy advice. The Canberra office had five full-time staff at 30 June 1991.

Executive Officer

Dr Don Kinsey is the Executive Officer of the Great Barrier Reef Marine Park Authority. He is responsible to the Chairman for the efficient operation of the Townsville office. He is also Secretary to the three-member Great Barrier Reef Marine Park Authority. Staff of the Secretariat and his executive assistant support him in these roles.

GREAT BARRIER REEF MINISTERIAL COUNCIL

The Great Barrier Reef Ministerial Council was established in June 1979 to coordinate policy on the Reef between the Commonwealth and Queensland Governments at the Ministerial level. The Council comprises four Ministers, two from each Government.

The Canberra Office of the Authority provides the secretariat for the Ministerial Council. Costs are shared by each Government.

SIXTEENTH MEETING - Cairns, August 1990

The meeting was attended by:

The Honourable Ros Kelly, MP, Minister for the Arts, Sport, the Environment, Tourism and Territories (convenor)

The Honourable John Kerin, MP, Minister for Primary Industries and Energy

The Honourable Pat Comben, MLA, Queensland Minister for Environment and Heritage

The Honourable Ed Casey, MLA, Queensland Minister for Primary Industries

The meeting had the following outcomes.

Council agreed that investigations continue with a view to complementary action by the Queensland and Commonwealth Governments to simplify current administrative difficulties associated with reclamation and excavation on the boundary of Marine Parks, including the option of limited referral of powers by Queensland to the Commonwealth for reclamations.

Council agreed that the current practice of collection by the aquarium industry of small amounts of sand from Queensland Marine Parks continue, subject to permit.

Council supported the continued emphasis on education and information as vital ingredients in achieving the management, conservation and reasonable use objectives of the Great Barrier Reef.

Council noted the extensive multi-disciplinary research and monitoring program that the Authority supports which underpins effective management of the Marine Park, and the high priority being given to research into crown-of-thorns starfish, effects of fishing, water quality and monitoring human use impact.

Council noted the continued progress of research on and concern with water quality management in the Great Barrier Reef Marine Park and urged all planning, management and research agencies with related expertise and responsibilities to cooperate and coordinate their activities to the greatest possible extent.

Council agreed that agencies should continue to give high priority to policies and procedures that reduce the risk of, or minimise the effects of oil spills and agreed that the introduction of legislation necessary for the implementation and support of a compulsory pilotage scheme be given the highest possible priority. The Council noted that despite the existence of REEFPLAN and other efforts, major difficulties will be experienced in the event of a large spill.

Council endorsed the Three-Year-Rolling Program for 1990-91 to 1992-93 and noted that management resources may need to increase in future years to meet obligations arising from increased usage of the Great Barrier Reef Marine Park.

Council endorsed the proposal for formation of a Queensland Marine Parks Consultative Committee.

Council noted that any proposals for exploration adjacent to the Marine Park will be subject to a preliminary environmental assessment, and that such an assessment is to begin for the Maryborough Basin and Townsville Trough and will be managed by the Authority.

SEVENTEENTH MEETING - Brisbane, February 1991

The four Ministers listed previously also attended this meeting.

The following business was achieved.

Council endorsed in principle the application of charges to commercial users of the Marine Park to offset the cost of Marine Park management. It asked for a detailed paper on the implementation of this system to be prepared for consideration at the next meeting of Council.

Council endorsed the proposed revised zoning plans for the Cairns Section of the Great Barrier Reef Marine Park and for the adjacent Queensland Cairns Marine Park, subject to resolution of the spearfishing issue.

Council noted that management plans are already being prepared for Queensland State marine parks and island national parks. Where appropriate, it is intended that complementary joint management plans will be prepared by the Authority for heavily used and particularly ecologically significant sites in the Great Barrier Reef Marine Park.

Council noted that the Commonwealth Government intends to introduce as soon as possible a compulsory pilotage scheme for certain categories of shipping considered to pose a threat to the Great Barrier Reef.

Council supported the urgent need for additional dedicated funding to address water quality issues relevant to the Marine Park.

Council endorsed the Three-Year-Rolling Program for 1991-92 to 1993-94 as a basis for funding.

GREAT BARRIER REEF CONSULTATIVE COMMITTEE

The Great Barrier Reef Consultative Committee was established by the *Great Barrier Reef Marine Park Act 1975* as an independent advisory body for both the Minister and the Authority. Specific functions defined in section 21 of the Act are listed in Appendix B.

The Consultative Committee represents a wide cross-section of interests in the Great Barrier Reef, from both the public and private sectors, including tourism, fishing, science, conservation and the Aboriginal and local government communities. It consists of members appointed by the Minister for a three-year term and a member of the Authority appointed by the Authority. The current term ends on 3 July 1992 for all members except Mr Graeme Kelleher, who as the Authority's appointee, has an indefinite term.

MEMBERSHIP 1 JULY 1990

Chairman:

A/Prof Helene Marsh James Cook University of North Queensland

Committee:

Mr Bob Bygott	Queensland Fish Management Authority
Mr Jim Ferguson	Department of the Arts, Sport, the Environment, Tourism and Territories
Mr Tony Fontes	Barrier Reef Diving Services and Dive Tourism Association of Australia
Mr Denis Griffith	Queensland Sport and Recreational Fishing Council
Mr Eddie Hegerl	Australian Littoral Society and Queensland Conservation Council
Dr Tor Hundloe	Griffith University
Mr Bill Kehoe	Queensland Commercial Fishermen's Organisation
Mr Graeme Kelleher, AM	Great Barrier Reef Marine Park Authority
Mr Gordon McKauge	Far North Queensland Promotions Bureau Tourism Task Force
Mr Andre Maestracci, MBE	South Molle and Hook Island Enterprises
Mr Jim Wallace	Association of Marine Park Tourism Operators and Quicksilver Connections

During the year, the following sequence of appointments by the Minister and of resignations by members took place:

1 August 1990 Mr David Perkins appointed as a representative of the
Queensland Department of Environment and Heritage

6 August 1990	Mr Ferguson resigned
9 October 1990	Alderman John Cleland, Mayor of Cairns appointed Mr Keith Fairbrother, Department of the Arts, Sport, the Environment, Tourism and Territories, appointed Mr Adrian Jeffreys, appointed as representative of the Australian Conservation Foundation Mr Walter Ziegelbauer, appointed as representative of the Aboriginal Co-ordinating Council
20 November 1990	Mr Fairbrother resigned
22 February 1991	Mr Bygott resigned
14 June 1991	Dr Harley Juffs, Queensland Department of Primary Industries, appointed
28 June 1991	Mr David Mazitelli, Commonwealth Department of the Arts, Sport, the Environment, Tourism and Territories, appointed.

The terms of all current appointments conclude 3 July 1992.

The Queensland Government has established a Queensland Marine Parks Consultative Committee:

- to enhance communication between parties involved in Queensland marine park issues
- to provide advice to the Queensland Minister for Environment and Heritage and to the Queensland Director of National Parks and Wildlife on Queensland marine parks.

Membership is the same as that of the Great Barrier Reef Consultative Committee, from time to time, except that Mr Ted Loveday is the member on the Queensland Committee representing the Queensland Commercial Fishermen's Organisation. Unlike the Commonwealth's Committee, the Queensland Committee is not established under legislation. The Great Barrier Reef Ministerial Council has agreed to the arrangement.

In practice, the Great Barrier Reef Consultative Committee now functions generally as a joint body with separate consideration of matters occurring only when those matters relate only to the Great Barrier Reef Marine Park or to Queensland marine parks. The Committees are served by the secretariat in the Office of the Authority. Mr Chris Smalley is Secretary to both.

The full additional costs of operating the combined Consultative Committees to allow the consideration of Queensland-only matters (including administrative support) are met by the Queensland Government through an arrangement under the external assistance and advice function of the Authority.

MEETINGS

During 1990-91, the Consultative Committees met as follows:

GBRCC	25 October 1990	Canberra
GBRCC and QMPCC	21 February 1991	Brisbane
GBRCC and QMPCC	18 to 20 June 1991	Townsville.

The Canberra meeting, held at Parliament House, was attended by the Commonwealth Minister for the Arts, Sport, the Environment, Tourism and Territories, Mrs Ros Kelly. The Queensland Minister for Environment and Heritage, Mr Pat Comben, attended the Brisbane meeting. The capital city venues provided opportunities for members to visit the agencies of the two Governments which have responsibilities for environmental management and use of the coastal zone and Great Barrier Reef, and to meet with their representatives.

The Townsville program included a visit to Palm Island, Central Section, to discuss with members of the Aboriginal Community, marine park issues of concern to the Community.

During the year, the Great Barrier Reef Consultative Committee received requests from the Authority for advice on the following matters:

- the economic outlook, in the short to medium term, for Marine Park tourism and for fishing
- issues identified in the terms of reference for the review of day-to-day management by Professor Alistair Gilmour
- the Authority's strategy for employment of and liaison with Aboriginals and Torres Strait Islanders
- the naming of unnamed reefs in the Marine Park.

It agreed to provide to the Minister advice in regard to:

- efficiency in proceedings of the Administrative Appeals Tribunal
- the proposed involvement by the Authority in arrangements to establish a National representative system of marine protected areas
- charging in the Great Barrier Reef Marine Park
- the need for research into environmental effects of trawling
- funding for employment of an Aboriginal liaison officer
- proposals by the Commonwealth Government to release areas, adjacent to the Great Barrier Reef Region, for oil exploration
- the possible limitation, through legislation, of the Authority's liability

- the education of ships' crews about codes of practice for shipping in Reef waters
- the potential for introduction of exotic organisms through the discharge of ballast from shipping.

In keeping with requirements under section 27A of the Act, members of the Commonwealth Committee have disclosed their direct and indirect pecuniary interests to a meeting of the Committee and have noted the obligations attached to their declarations.

PLANNING AND MANAGEMENT

The section aims to conserve the Great Barrier Reef while allowing reasonable use by recommending the declaration of sections of the Marine Park; developing and reviewing zoning plans, regulations, and other management strategies; providing policy advice on management of the Marine Park; achieving cost-effective implementation of zoning plans, regulations, and other management strategies in conjunction with Queensland Government agencies and others; and by involving the community meaningfully in these processes.

Critical to the achievement of the Planning and Management objective is the synthesis and analysis of information on the character, resources, use and amenity of the Great Barrier Reef Region.

In 1990-91 Planning and Management proposed an ambitious program with the following priorities:

1. improving the effectiveness of day-to-day management
2. completion of the review of zoning for the Cairns Section
3. development of management plans for a number of intensively used sites
4. upgrading management information systems — information collection, and storage and retrieval including upgrading of computer systems and the establishment of a geographic information system (GIS)
5. increased liaison with users of the park
6. review of the values, for inclusion in the Marine Park, of further areas of the Great Barrier Reef Region.

Major achievements for the year included:

- finalisation of Cairns Section Zoning Plan review for consideration by Ministerial Council
- implementation of a revised aerial surveillance system, to provide surveillance for enforcement purposes and a statistically valid system for monitoring park usage patterns
- improved Marine Park patrol and enforcement capability, through coordination of the various enforcement agencies and training of inspectors
- commencement of 11 management plans
- substantial progress towards review and upgrading of systems for administration of day-to-day management.

A number of factors detracted from the performance of the section during the year. Turnover, movement and shortages of suitable replacement staff delayed completion of Cairns Zoning Plan and adversely affected the work program as a whole. The ongoing need to react to management issues, such as

consideration of management actions to address large dumps of unexploded ordnance offshore from Townsville and a number of minor oil spills, continue to be a time-consuming but unavoidable work load. This reactive workload continues to delay the development of management plans, which are necessary to provide guidance for management program formulation, permit assessment, and zoning plan review. Considerable effort has been given to streamlining management practices and reallocating resources to ensure that greater priority can be given to management planning and development of the management information base in the forthcoming year.

MANAGEMENT PLANNING

To date management of the Marine Park has been controlled primarily through the preparation and implementation of zoning plans. Such zoning plans, the various zone types, and other controls like permits, are now well known and generally accepted by the public, having been in use for over ten years.

Zoning plans provide a determination of the appropriate, or inappropriate activities for the Marine Park at a broad scale, but do not establish the appropriate levels of the activities or address allocation of resources between permitted uses. There is a need for more detailed planning especially at heavily used sites.

The inter-relationship between the adjacent mainland coast, the islands and the marine environment, and the agreement with Queensland on complementary management funding and administrative arrangements have made it essential that consultation occurs to determine issues, priorities and strategies for management within, or adjacent to, the outer boundaries of the Great Barrier Reef Region. This requires the establishment of planning teams to coordinate input from the various agencies and to ensure that management plans are complementary in addressing the needs of each agency.

Involvement in management planning over the past year included:

- finalisation of the joint Magnetic Island Management Plan with Townsville City Council and Q.NPWS
- completion of a Sensitive Site Strategy for management of anchor damage in the Whitsunday Islands area
- the release for public comment of draft management plans for Florence Bay, Low Isles and Green Island
- completion of draft plans for Beaver Reef, the Franklands Islands Group, the Family Islands Group, the Brook Islands, Gould Island and Northwest Island
- commencement of an overall management plan for the Whitsunday Islands Group and adjacent reefs and islands.

REVIEW OF CAIRNS SECTION ZONING PLAN

Once a zoning plan for any section of the Marine Park comes into effect it remains operational until a new plan is prepared by a process which involves public participation and consultation. The Great Barrier Reef Marine Park



Michaelmas Cay and Reef is one of the popular visitor spots in the Cairns Section which will be kept as natural as possible through its 'No Structures' subzoning in the revised zoning plan.

Authority is committed to review each zoning plan after it has been in operation for about five years.

The Cairns Section covers an area of some 35,000 square kilometres and extends for over 400 kilometres along the coast adjacent to the towns of Tully, Innisfail, Cairns, Mossman, Port Douglas and Cooktown. The Cairns Section is one of four sections making up the Great Barrier Reef Marine Park.

The development of the initial zoning plans for the Cairns Section and Cormorant Pass Section took place in 1982-83. When the zoning plans came into effect in November 1983, the Cairns Section was the second major section of the Marine Park to be proclaimed and managed.

The review of the Cairns Section Zoning Plan and the Cormorant Pass Section Zoning Plan commenced during late 1988. The first part of that review incorporated the rationalisation of the boundaries of the two sections. The Cairns Section was amended in 1989 with the amalgamation of the small Cormorant Pass Section (proclaimed in the Commonwealth of Australia Gazette, 13 September 1989).

The revision of the Cairns Section Zoning Plan has involved a comprehensive program including two formal public participation stages and a great deal of community cooperation and liaison. As a result of the high profile of the issues in the media, particularly of the various meetings attended by staff of the Authority and the Queensland National Parks and Wildlife Service, a total of 1209 written representations, including 208 form letters, were received during the two periods of public input.

Revisions to the zoning plans, to take account of representations received during the second public participation program, have been considered at meetings with officials of State and Commonwealth departments and agencies. In addition, staff have held discussions and reached broad agreement with representatives of commercial fishing and charter boat industries, recreational fishing and conservation groups, the tourism industry and other user groups.

The revised zoning plan has now been finalised by the Authority for consideration by the Minister. Subject to its acceptance by the Minister and both houses of Commonwealth Parliament, it is anticipated that the revised plan will come into effect in about December 1991.

Until the revised zoning plan for the new Cairns Section comes into effect, the existing Cairns Section and Cormorant Pass Section Zoning Plans will remain in force.

DAY-TO-DAY MANAGEMENT

In accordance with inter-governmental agreements, day-to-day management of the Great Barrier Reef Marine Park is carried out by agencies of the Queensland Government, principally the Queensland National Parks and Wildlife Service (Q.NPWS) and the Queensland Boating and Fisheries Patrol (QBFP). Q.NPWS is also responsible for management of Queensland marine parks and island national parks in addition to their responsibility for the mainland national park estate.

The Great Barrier Reef Marine Park covers 344,000 square kilometres, about equal to the area of Victoria and Tasmania combined. Within this area day-to-day management staff have responsibility for 2904 reefs and the majority of the Region's 684 continental islands and 256 coral cays.

Fishing and tourism are the major uses of the Marine Park. Estimates in July 1988 had some 1110 primary commercial fishing vessels and, in 1990, some 24,000 recreational fishing vessels operating in the Great Barrier Reef Region. At the same time an estimated 2.1 million visitor days per annum were spent by tourists within the outer boundaries of the Great Barrier Reef Region. Tourism growth has brought a major diversification of infrastructure used by tourist operators, eg large pontoons and large passenger catamarans. These facilities, together with other major tourism nodes in the Great Barrier Reef Region all require intensive management.

Despite the large increases in management responsibilities in recent years, the real level of funding available for Marine Park management (Table 1) had remained close to the low level at which it was set in 1988-89. In recognition of the urgent need for additional resources, the relevant Commonwealth and Queensland departments have each agreed to include and support an 8% funding increase (in real terms) in 1991-92 budget submissions. At its 16th Meeting, the Great Barrier Reef Ministerial Council endorsed the proposed 8% budget increase, subject to budget considerations, and noted that resources may need to be further increased in future years to meet obligations arising from increased usage of the Marine Park.

TABLE 1
FUNDING FOR DAY-TO-DAY MANAGEMENT OF THE MARINE PARK
 (adjusted to 1990-91 dollar values)

Year	Total Cost \$	Total Area* km ²	Unit Cost \$/km ²
1981-82	290 015	12 000	24.17
1982-83	641 967	12 000	53.50
1983-84	1 307 223	47 000	27.81
1984-85	2 202 411	47 000	46.86
1985-86	2 655 761	130 000	20.43
1986-87	3 264 218	130 000	25.11
1987-88	3 882 283	207 000	18.75
1988-89	4 711 674	344 000	13.70
1989-90	5 439 168	344 000	15.81
1990-91	5 614 942	344 000	16.32

*area of 'managed' Marine Park

Table 2 details expenditure for 1990-91 and estimated funding for 1991-92 for day-to-day management. Table 3 outlines cost sharing between Queensland and the Commonwealth.

TABLE 2.
**PAYMENTS TO QUEENSLAND DEPARTMENT OF ENVIRONMENT
 AND HERITAGE FOR DAY-TO-DAY MANAGEMENT, BY REGIONS**

	1990-91 \$	1991-92 (estimated) \$
Head Office		
Salaries & Operating	2 408 436	2 255 107
Capital (Inc. Post Initial)	29 000	
Central		
Wages & Operating	664 141	720 200
Capital (Inc. Post Initial)	172 544	624 000
Northern Region		
Wages & Operating	1 163 279	1 247 183
Capital (Inc. Post Initial)	356 066	601 550
Far Northern Region		
Wages & Operating	625 950	900 060
Capital (Inc. Post Initial)	195 526	653 142
All Regions		
Salaries; Wages & Operating	4 861 806	5 122 550
Capital (Inc. Post Initial)	753 136	1 878 692
TOTAL	5 614 942	7 001 242

TABLE 3.

COST SHARING FOR DAY-TO-DAY MANAGEMENT

	1990-91 \$	1991-92 (estimated) \$
Queensland		
Salaries, Wages & Operating	2 430 903	2 561 275
Post Initial Capital	217 646	504 025
Total	2 648 549	3 065 300
Commonwealth		
Salaries, Wages & Operating	2 430 903	2 561 275
Post Initial Capital	217 646	504 025
Initial Capital	317 844	870 642
Total	2 966 393	3 935 942
TOTAL	5 614 942	7 001 242

In order to obtain an independent measure of public perception of day-to-day management and of the minimum resources needed to provide an essential level of management, the Authority has commissioned a review which is currently being undertaken by Professor Alistair Gilmour with Dr John Cunningham and Mr David Lamond of Macquarie University. The objectives of the review are:

- to review park management to determine both a desirable and a prudent minimal essential management level for the Great Barrier Reef Marine Park
- to review day-to-day management documents to determine whether they adequately describe day-to-day management as for the above
- to review staff resources and levels to determine whether they meet the above
- to review management agency and user perceptions of day-to-day management to determine whether they meet the above.

The bulk of the investigations for the review were completed during 1990-91, including detailed interviews with all management staff and formal surveys of about 1700 Park users with a wide range of interests. The results are currently being analysed and a report with detailed recommendations will be available to incorporate into the development of future three-year-rolling programs for day-to-day management.

PROSECUTION AND ENFORCEMENT

Management of the Marine Park concerns management of its users, mainly by encouraging community understanding and acceptance of plans, regulations, and management practices. Surveillance and enforcement to follow up infringements is also essential, and is carried out by the Q.NPWS in conjunction with Coastwatch, the QBFP and the Queensland Water Police.

During 1990-91 increased emphasis has been placed on providing adequate training for Marine Park Inspectors. Six Basic Inspectors Courses were held with a total of 100 staff attending. This included training of new inspectors as well as existing staff.

Advanced Inspector Courses are scheduled for late 1991 and early 1992. Course structure and content have been drafted.

Largely as a consequence of the emphasis placed on enforcement training, this year has seen a marked increase in the number of people prosecuted for offences under the *Great Barrier Reef Marine Park Act 1975*. Over 18 convictions were secured during the year with others pending. Monies totalling \$11,217 were derived from the sale of forfeited product as well as fines. All three agencies, Q.NPWS, QBFP and the Queensland Water Police have been heavily involved in enforcement duties and prosecutions.

Offences were generally those associated with non-permitted activities in Marine National Park 'B' zones. There were also several convictions for collecting without a permit and a conviction for discharge of waste in the Park.

The validity of the Great Barrier Reef Marine Park Act and Regulations was endorsed during the year when a tourist operator was prosecuted for conducting a tourist program to Green Island without a permit. The case was of great concern as failure of the prosecution would have placed doubt on the ability of the legislation to control the rapidly expanding tourism demand for access to sensitive areas within the Cairns Section. The validity of the legislation was upheld but only after a lengthy legal process.

Whilst the enforcement presence has been increased in most areas of the Park, every opportunity has been taken to educate and inform the public about the Park's management.

SURVEILLANCE

Surveillance was carried out by both Q.NPWS and Coastwatch. In addition to regular surveillance flights, aircraft from Coastwatch and Q.NPWS have operated closely with the 'Operation Barrier Protection', a program of vessel patrols specifically implemented to target illegal fishing in the more remote areas of the Park. Aerial surveillance support is critical to the success of this program.

Regular liaison with Coastwatch is occurring at all levels of management and half-day training courses focusing on the Great Barrier Reef Marine Park for all new Coastwatch observers are a regular event.

Use of computerised aerial surveillance data for analysis of Park usage patterns is being hindered by problems with electronic 'reading' of the Coastwatch post-flight reports. Currently the incoming post-flight reports require manual entry until an arrangement can be made between Coastwatch (on a national level) and GBRMPA as to an acceptable format for these reports. The entry of the backlog of data will not be completed in the foreseeable future because of staffing limitations.

MANAGEMENT NEWS

The internal publication *Management News* has recommenced after a spell of about 12 months. Issues are being produced every 3-4 months. The publication is used to inform staff of the Authority and Queensland agencies about current activities and management practices in the Great Barrier Reef Marine Park.

OVERSEAS CONSULTANCIES

A project to assist the Government of Belize to develop a system of marine protected areas was commenced in cooperation with the International Union for Conservation of Nature. During the past year the Authority provided a three-month program of training in marine park planning and management for Mr Vincent Gillett, the Senior Belizean Fisheries Administrator. It is expected that the Authority will continue to be contracted by the IUCN to provide advice and expertise to the Government of Belize.

Staff of the section were involved in a project managed by the South Australian Centre for Remote Sensing, under a Memorandum of Understanding between Australia and Malaysia, to provide marine park planning assistance. The first stage of this project was to provide assistance for a pilot project which looked at the use of remote sensing for planning and management for the island group of Pulau Perhentian, off the east coast of Malaysia.

COMPUTER SERVICES

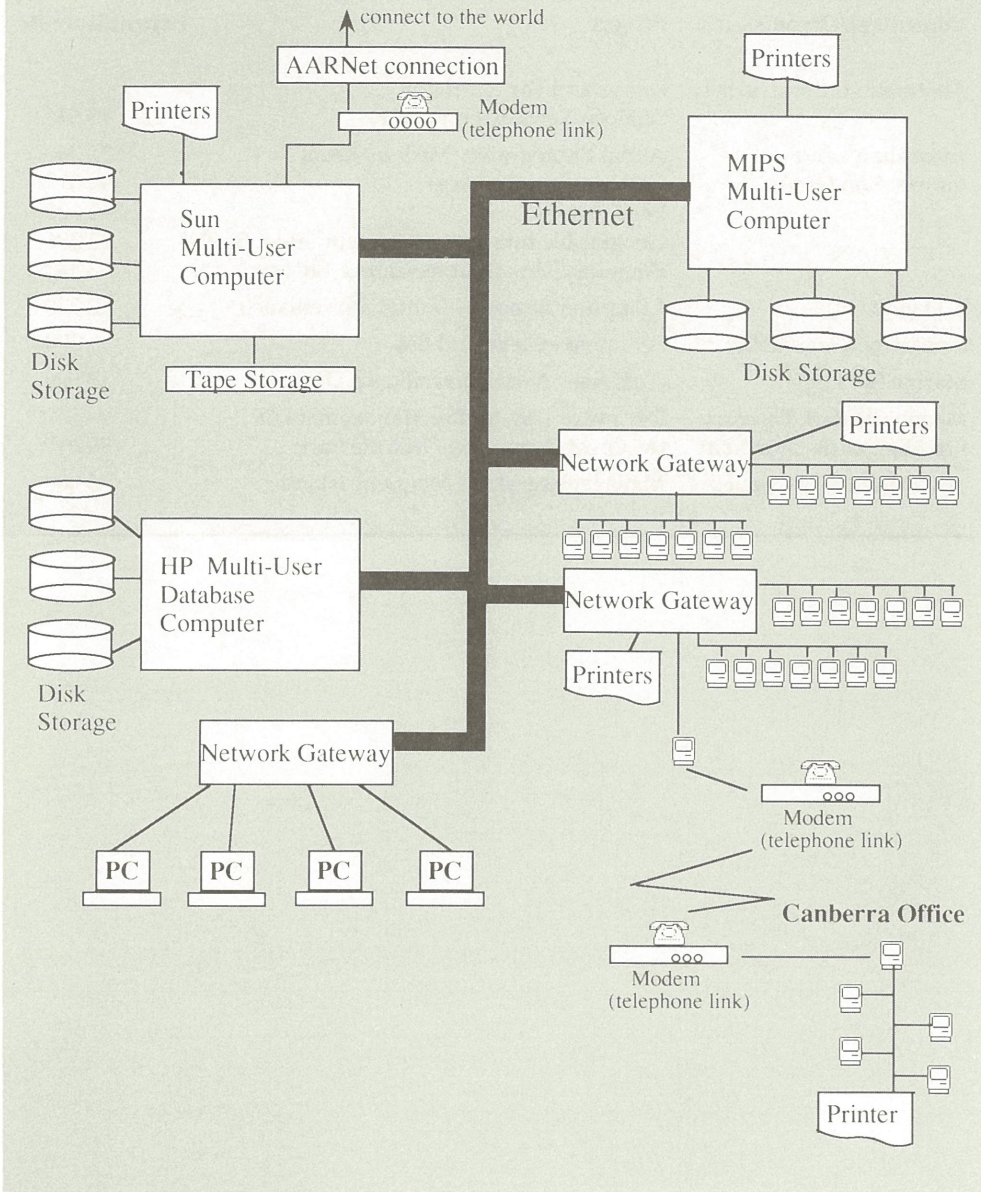
The substantial emphasis of computing staff during 1990-91 has been on consolidation of the network of micro- and mini-computers. A number of fine-tuning tasks have been necessary to ensure the stability of the network and the compatibility of the different operating systems used. More comprehensive data security and storage facilities have been implemented.

The three mini-computers at the hub of the network are a database computer, a dedicated file server for microcomputer users, and a third computer which is also used as a file server and to manage print spooling. All three mini-computers run under the UNIX operating system which, with today's emphasis on 'open systems' in the computing world, guarantees more compatibility in the future.

Since the network has stabilised, consideration has been given to the ease of access of users to the vast store of data collected over the years and held in the ORACLE database. Many potential users of this data have been discouraged by the need to learn fairly complicated procedures which are quickly forgotten without constant use. To this end, more intuitive interfaces are being developed on Macintoshes using Hypercard to access the data on the mini-computer database. In addition new applications have been developed using a graphical interface to computerise the registry system and a media database.

At present work is being undertaken to establish a connection with James Cook University using AARNet (Australian Academic Research Network). Once the connection is established Authority staff will be able to communicate

FIGURE 2. GBRMPA COMPUTER NETWORK 1990/91



electronically with academic bodies and through them with the rest of the world.

Following the pilot study completed last year, software and hardware components have been purchased in preparation for establishment of comprehensive geographical and spatial analysis systems. Due to unforeseen circumstances, staffing in this area has been less than anticipated and, as a consequence, only preliminary evaluation of software and implementation strategies have been able to be conducted this year. It is planned that more substantial progress will be made in this area in the coming year.

TABLE 4: CONSULTANCY SERVICES

Consultant/Organisation	Project	Expenditure (\$)
Australian Littoral Society	Cairns and Far Northern Sections Resource Inventory	18 544
Australian Land Information Group	Aerial Photography Various Reefs	73 360
	Cartographic Services	94 817
	Field Survey	142 600
	Geographic Information System - Pilot Study	53 386
	Boundary Descriptions-Cairns Survey	3 443
K Dwyer	Computer Support - Aerial Surveillance	2 270
James Cook University	Sediment - Cleveland Bay	1 570
Marine Bio Logic	Analysis - Aerial Surveillance Data	7 500
Macquarie Park Research Ltd Macquarie University	Review of Day-to-day Management of the Great Barrier Reef Marine Park	99 615
Townsville City Council	Management Plan - Magnetic Island	5 000

ENVIRONMENTAL IMPACT MANAGEMENT

The section aims to protect the natural qualities of the Great Barrier Reef while providing for its reasonable and equitable use through the assessment and management of the environmental impacts of users. A major tool in this process is the regulation and control of activities through the permit system. The section's programs are undertaken with Queensland Government agencies and others. Associated costs are recovered where practicable, with care taken to ensure that users whose activities are managed by more than one agency are not subject to duplicate charges.

For 1990-91 Environmental Impact Management set the following objectives:

- to manage major assessment projects with tight time lines and with limited resources
- to develop policies, procedures and guidelines for the assessment and management of projects likely to have significant environmental impacts
- to develop to a high standard a network of liaison with Government departments, the public and permitted Marine Park users, including the development of standard information packages
- to refine and expand the process of cost recovery through the permit assessment fee system, so that all commercial permit applications pay for assessment costs
- to develop systems for allocation of reef use to commercial operations, including charging mechanisms where appropriate
- to develop and implement a reef-wide policy on mariculture
- to coordinate the provision of legal advice to the Authority through liaison with the Attorney-General's Department and the maintenance of the legal opinions database
- to produce a risk management program for the Authority.

Permit assessment fees were introduced for commercial tourist operations, and the period of issue for most permits was extended from one to three years. The expected benefits of a reduction in the administrative and clerical workload associated with the issue of permits only began to manifest themselves towards the end of the year. The issue of permits for a longer time period resulted in more rigorous assessment to ensure that permit conditions allowed the flexibility necessary to deal with the longer time periods between reassessments. The need for an increasing range of policy guidelines to aid

the assessment of the expanding range of activities and users in the Marine Park contributed to the delay in the assessment and issue of some permits. Detailed assessments of several large projects were undertaken. All involved close cooperation with Queensland Government agencies. A substantial amount of effort was spent in developing better liaison and joint assessment and management arrangements with Queensland Government agencies, with particular emphasis being paid to mariculture activities.

A re-evaluation of procedures for the assessment and management of pontoon facilities on the reef was undertaken in order to improve liaison, minimise delays in the assessment process and further reduce environmental impacts. The importance of this re-evaluation was highlighted by the need to respond quickly to damage to a number of facilities by the passage of Cyclone Joy off the north-east Queensland coast in December 1990.

COMPLEMENTARY MANAGEMENT

The assessment and issue of joint permits for the Great Barrier Reef Marine Park and Queensland Marine Parks, and the increasing cooperation with a range of other agencies in the assessment of major proposals, has proved to be an efficient and effective means of managing resource use and the impacts of development in the Marine Park. There are a number of areas where it has been recognised that procedures require further development and strategies are being developed to address these, such as the development of resource allocation systems which take into account commercial needs for longer term security of use than those granted by permits of one to three years duration.

In the interests of efficiency, the Authority intends to delegate its permitting powers for collecting fisheries (pearl shell, beche-de-mer, trochus, aquarium fish, coral, marine shells) to QDPI. This will take place when the two agencies, together with Q.NPWS, agree on management plans for the respective fisheries. QDPI are currently preparing these plans, with those for trochus and aquarium fish nearing completion.

There has been recognition that the increasing role played by Q.NPWS in the joint assessment of tourist applications has generated the need for training in assessment procedures for Q.NPWS staff. A number of workshops were held over the year to identify problem areas and training needs, and it is proposed to hold similar workshops on a regular basis in the future. Workshops held with Q.NPWS also proved invaluable in highlighting areas requiring policy development and the establishment of guidelines.

Substantial staff time was devoted to working with officers from other sections of the Authority and Q.NPWS on the development of management plans for reef and island complexes to guide the management of use of locations coming under increasing pressure (see following pages).

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

Details of major projects assessed wholly or in part during the year are shown in the fold out map inside the back of this report. No new projects were designated under the *Environment Protection (Impact of Proposals) Act 1974* during the 1990-91 financial year.

The work of the section also involved the ongoing management and monitoring of permitted projects, together with the review of permit decisions. The more complex projects and those with the potential for significant environmental impacts included:

- a cross-reef walkway and pontoon complex at Hardy Reef
- a small boat harbour and associated development at Dent Island
- marinas at Shute Harbour and Nelly Bay (Magnetic Quays)
- a resort, marina and airstrip proposal at Keswick Island
- the resort and boat basin at Lloyd Bay
- the redevelopment of the tourist facilities at Green Island
- the installation of a 'wreck dive' facility in the Cairns Section.



The reef-top walkway at Wistari Reef has been monitored to help with the development of guidelines to assess future walkway proposals.

Cross-reef Walkway and Pontoon at Hardy Reef

Following the establishment of a reef-top walkway at Wistari Reef, work was undertaken on the development of a policy for 'fixed structures on the reef' to guide the assessment of future similar proposals. These guidelines were used in the assessment of the Hardy Reef walkway, which proposes to link pontoons in the channel and in the lagoon. As a result, substantial modifications of the design were made to minimise predicted impacts.

Marinas at Shute Harbour and Keswick Island

Proposals which involve reclamation require careful consideration of the options available to ensure the preservation of the integrity of the Marine Park boundary. Discussions with the Queensland Government concerning these options is continuing. Assessment of the Shute Harbour and Keswick Island proposals has reinforced the need for early and ongoing liaison with

proponents, and the advantages of the provision of pre-development information packages and guidelines.

Pontoon at Lady Musgrave Island

The application for a pontoon and large vessel operation at Lady Musgrave Island was lodged at the time when the management plan for the island was under review. As a result of the application, a comprehensive social/user amenity survey is being conducted on the use of the island and lagoon. The results of the survey will contribute to the resolution of management issues and will provide guidelines for the assessment of the application.

Wreck Dive Facility

The proposal for the installation of a vessel hull on the seabed to provide a wreck dive opportunity in the Cairns region is the first of its type in the Marine Park. The assessment process has raised a number of questions regarding the establishment of artificial reefs in the Marine Park.

Magnetic Quays

Work ceased on this project early in 1990-91 due to difficulties on the part of the proponent and receivers were appointed in December 1990. Action was taken by the Authority in December 1990 to render the site safe for the wet season - these works were completed on Christmas Eve and paid for by the receiver. Efforts to restart work on the project continue. Monitoring to date indicates that the environmental impacts of construction are within anticipated limits, i.e. there has been no significant detectable effect away from the immediate site.

Ore Loading Facility at Halifax Bay

This proposal to establish an anchoring and offloading facility for nickel ore in Halifax Bay was designated under the *Environment Protection (Impact of Proposals) Act 1974* and subject to detailed environmental impact assessment and public comment. Permission for the proposal was refused by the appropriate Authority delegate, and this decision was upheld by the Authority after a reconsideration request by the proponent. The proponent subsequently filed an application for review by the Administrative Appeals Tribunal (AAT). The hearing commenced in Townsville on 1 July 1991. At the time of writing this report, the appeal process has taken considerable Authority resources and is unlikely to be resolved until well into 1992, leaving uncertainty with the proponent and other concerned users.

POLICY DEVELOPMENT

The main policy issues considered during the year related to pontoons, mariculture and point-source waste discharge. Other areas where work on policy development has been undertaken include marinas, fixed structures on the reef, aircraft operations, bareboats, cruise ships, research proposals, fish aggregation devices and artificial reefs. Policies to meet the many new demands being placed on the Marine Park were also developed on an 'as needed' basis, largely through the process of assessing permits.

Mariculture

In November 1990 a 12-month program was initiated to develop policies to implement effective management procedures for mariculture projects. In the following months 27 projects were assessed. Working together with QDPI and Q.NPWS, development is proceeding on a number of management policies, the first of which considers the use of the giant clam *Tridacna gigas*.

Pontoons

Over the past year a number of permitted pontoon operations have caused concern through the failure of anchoring systems and poor maintenance procedures. This has resulted in unacceptable levels of environmental damage at some sites. In the process of addressing these problems, policy guidelines for the establishment of pontoon facilities have been refined.

These guidelines have been expanded into an information package for use by proponents and the managing agencies.

Point-Source Waste Discharge

A major concern in recent years has been the possibility of long-term degradation in water quality in the Marine Park. In January 1991 new policy guidelines for point-source waste discharge were adopted by the Authority, and their implementation has resulted in extensive site inspections, detailed assessment of renewal applications and a high degree of liaison with operators.

The policy requires that all effluent be subject to tertiary treatment (i.e. removal of the nutrients, phosphorus and nitrogen) prior to discharge and that marine outfalls meet new requirements in relation to their siting in the Marine Park.

LEGAL MATTERS

Obligations arising from litigation in which the Authority was a party continue to require a significant input of resources. The appeal to the AAT by the proponent in the Halifax Bay project required extensive preparation of material and submissions for the hearing, both by Authority staff and independent experts.

The Authority had previously taken legal action against a tourist operator who commenced a service to Green Island without permission. The prosecution and the associated injunction were unsuccessful in the first instance. Appeals to the Supreme Court of Queensland were successful. The case was remitted back to the Cairns Magistrates Court for re-hearing and on 11 April 1991 the tourist operator was fined \$15,693 for a total of ten breaches of the Act.

Section staff provided significant input into the inspectors courses run by Q.NPWS (described on page 25). Legislation workshops were also held in conjunction with training courses for QBFP and the Queensland Water Police.

A risk-management program is being developed by Authority staff with the assistance of external consultants and the Office of the Australian Government Solicitor. The aim of the program is to identify areas of potential liability and to develop an action plan for their management. A risk-management manual

is nearing completion, with implementation of the program, which includes training, to commence early in 1991-92.

Litigation remains a drain on the section's resources and adversely affects the ability of the Authority to carry out its responsibilities in environmental impact management through the diversion of staff time and energies from assessment and management work.

CHARGING FOR USE OF THE MARINE PARK AND COST RECOVERY

Permit assessment fees for tourism-related applications were introduced from 1 January 1991 as the first stage of charging fees for the assessment of all commercial permit applications. The introduction of permit assessment fees for all remaining commercial permit applications is planned from 1 July 1991.

At the request of the Great Barrier Reef Ministerial Council, systems for the allocation of scarce reef resources were further investigated during 1990-91. Charging systems to recover management costs were developed further as part of this investigation. Authority staff have worked closely with the

Association of Marine Park Tourism Operators to ensure that commercial needs are incorporated in the development of systems. There has been no decision by Government to introduce any specific system, but detailed consideration of options is expected during 1991-92.

PERFORMANCE INFORMATION

In 1990-91, 572 permits were issued, compared with 699 in 1989-90. The anticipated reduction in the overall number of permits issued in any one year, as a result of the longer time period for which the majority of permits are now

Figure 3. PERMITS ISSUED 1990-91

Tourist Programs	227
Collecting	147
Research	133
Education	33
Farming of marine resources	5
Commercial filming	5
Traditional hunting and fishing	3
Aircraft operations	3
Moorings*	1
Other**	15

* Moorings installed as part of larger programs are included on tourist program permits.

** 'Other' includes dumping of spoil, navigation aids, harbour works, fuel pipelines, discharge of waste, burial at sea and some fishing activities.

issued, is expected to become more pronounced next financial year, when the majority of one-year permits will have been replaced with three-year permits.

The trend towards more complex proposals, such as those for tourist programs with facilities and marina developments, continued. In addition, where a single operator had previously held a number of different permits, there was a concerted effort to place all the permitted programs on a single permit. This approach, while it involves a greater amount of work at the time of assessment, benefits operators in the long term.

The programs and projects pursued in 1990-91 presented a number of difficult and time-consuming challenges, but the work of the section continued to be effective.

There was a growing acceptance and awareness by both proponents and the public of the environmental management obligations and requirements of the Authority, evidenced by the desire of user groups to participate in the development of management plans regulating use of the Marine Park and its resources.

There was an increasing desire by user groups to establish formal liaison and interactive arrangements with the Authority and other managing agencies, in particular through the planned establishment of regional liaison committees.

The level of feedback to the Authority from permittees increased.

There was a high degree of compliance with the provisions of the zoning plans and permit conditions by permittees coupled with the desire by commercial tourism user groups to develop codes of environmental practice and self-regulatory mechanisms to comply with Marine Park management requirements.

Limited staff resources often increased the time taken to assess permit applications. The importance given to involvement of applicants in the assessment of proposals, and the willingness of applicants to be involved, will play a significant role in ensuring public understanding and acceptance of management objectives and their translation into permit conditions.

An additional means of assessing the section's work performance was introduced in the past year with the establishment of a formal staff appraisal process, based largely on guided self-assessment. The process encourages staff to identify strengths and weaknesses in their work programs, and targets training needs. The process has been systematically introduced throughout the section over the past year and has been welcomed by staff.

CONSULTANTS

External consultants were used on projects where it was efficient to use expertise in another agency or where there were benefits in having discrete parts of a project undertaken by a consultant. The consultancy services used by the section in 1990-91 are presented in Table 5.

TABLE 5.

CONSULTANCY SERVICES

Consultant/ Organisation	Project	Expenditure (\$)
Coopers & Lybrand	Investment Analysis - model of evaluation	22 250
Marine Bio Logic	Marina manual guidelines	3 600
Sedgewick James Ltd	Liability - Risk Management	16 000
Administrative Appeals Tribunal - Ore Importation through Halifax Bay:		
AIMS	Report on coral communities - Halifax Bay and Magnetic Island	15 870
CSIRO - Division of Fisheries Research	Review of toxicological issues	7 280
Envirotest	Review of toxicological issues	12 203
James Cook University	Analysis of surface sediment in Cleveland Bay	2 000
McIntyre & Associates P/L	Review of town planning issues	3 500
Museum of Tropical Queensland	Report on soft bottom communities in Halifax Bay	765
QDPI	Report on seagrass beds in Halifax Bay	1 350
Read Sturgess & Associates	Review of economic issues	958
Steedman Science and Engineering	Report on operational and engineering issues	7 280

RESEARCH AND MONITORING

The section aims to achieve competence and fairness in the care and development of the Marine Park by obtaining and interpreting information relevant to the understanding of the Great Barrier Reef and to the implementation of the Authority's programs.

The program objective is therefore to obtain, interpret, disseminate and apply information relevant to understanding the Great Barrier Reef and managing the Great Barrier Reef Marine Park in accordance with the principles of ecologically sustainable use.

Information is collected from research into key areas and management issues conducted primarily by private, university, industry and government researchers under contract to the Authority. The role of staff to date has been primarily to manage such contracts for the acquisition, interpretation, dissemination and application of research results for other sections of the Authority.

PRINCIPLES

The following guiding principles are followed as far as possible in the development and conduct of the program.

1. It will be directed towards key issues of relevance to planning and managing the Great Barrier Reef Marine Park.
2. It will primarily be carried out by the best available research institutions, government agencies or individual researchers under contract to the Authority.
3. Projects and programs will be subject to independent expert peer review prior to commissioning and on completion.
4. Projects which involve sampling to test predictions will be designed to allow for statistically rigorous analysis.
5. It will be coordinated with programs of other research agencies, government agencies and industry to address issues of mutual concern, maximise efficient use of resources and to ensure the use of appropriate design and methodology.
6. Results will be published or otherwise disseminated and applied as widely as possible.
7. The extent of monitoring required to comply with permit conditions should be related to the predicted degree of environmental risk and potential impacts from the permitted activity; monitoring programs of permitted activities should be designed to trigger a management response in time to prevent significant impacts occurring.

8. Monitoring of the effects of specific permitted operations will be managed by the Authority through the use of consultants at the expense of the proponent.

PROGRAM EVALUATION

The program effectiveness and efficiency is evaluated by the degree to which:

- projects are completed and information disseminated to relevant users
- staff development appraisal needs are met
- it is integrated with the programs of other sections

GENERAL OUTCOME

The year has been successful with most high priority projects commissioned and virtually all available funds expended.

The second year of the expanded Crown-of-thorns Starfish Program was completed and an independent review of the program made by Dr R Johannes. Dr Johannes concluded that the program 'has operated in an efficient and productive manner during 1989-91 and has contributed significantly to the knowledge required for the use and enjoyment of the Great Barrier Reef in an ecologically sustainable manner'.

Significant collaboration with the Queensland Government and the rural sector was achieved to address water quality issues on the Great Barrier Reef.

A pilot study for the Torres Strait Baseline Study has been designed and will commence in 1991-92. Significant progress has been made in gaining the confidence of the scientific community, the Torres Strait Islander community and the government agencies involved.

A major experiment to determine the effects of trawl and line fishing in the Great Barrier Reef Region was designed collaboratively with other researchers.

Swift responses were made to monitor the effects of catastrophic events e.g. Cyclone Ivor and the Fitzroy River floods.

Significant monitoring programs for dugong, reef benthos, crown-of-thorns starfish and spoil dumping were conducted.

Four new staff were recruited and a change of section head made. Seven workshops, one conference and the annual research day were successfully held.

Several major problems were encountered during the year.

There was a high number of projects for the available staff resources. The ratio of projects to staff will be significantly reduced in 1991-92.

The backlog of uncompleted projects from previous years was large. Action has been taken to reduce the number of outstanding reports.

Key issues such as long-term, reef-wide monitoring and information management have not been adequately addressed. This will be remedied in 1991-92.

There was a backlog of unpublished reports. This number has been reduced to approximately 160, by critically reviewing the necessity of publishing. As many of these as possible will be published in 1991-92 within available funds

The Research and Monitoring program contains eight subprograms which reflect the priorities set by the Authority. The sub-programs and outcomes for 1990-91 are described below.

WATER QUALITY

Water quality in the Great Barrier Reef is a critical management issue. The main concerns are the potential effects of nutrients on corals and algae. Enhanced levels of phosphorus are associated with a weakening of the coral skeleton. Increased nitrogen and phosphorus stimulate growth of algae which compete with corals for light and space. Suspended sediments decrease the amount of light available to corals, inhibiting their growth, and can stress corals through settlement on coral surfaces. Corals may be weakened by these stresses and be susceptible to other disturbances e.g. cyclones or crown-of-thorns starfish. The main human-induced sources of pollutants appear to be run-off of soil from land clearance and chemical fertilisers from agricultural activities, discharge of wastes from island resorts, discharge of sewage from coastal cities either directly or indirectly and dredging from harbours and marina construction activities.

Recent studies have indicated the presence of elevated nutrient levels in a number of rivers in agricultural areas and possible effects on a few reefs adjacent to the river mouths. The extent of elevated nutrient levels and their effects is poorly known. A major program is needed to determine background levels, natural fluctuations and trends in nutrients for the Great Barrier Reef Lagoon and at specific sites and to differentiate any human-induced changes from natural change.

Outcomes

Approximately 25% of the 1990-91 program was directed towards water quality issues. Substantial progress has been made in establishing nutrient budgets for the Central Section of the Great Barrier Reef Marine Park. A project to evaluate the effects of sewage discharge at Green Island has commenced. Revised policy for direct discharges of sewage into the Marine Park is being implemented progressively. All direct discharges are required to upgrade to secondary treatment by the end of 1992 and to tertiary level by the end of 1995. A program of inspection of all discharge pipes and treatment plants should be completed shortly. There was substantial collaboration with other agencies during the year to address water quality issues e.g. Johnston River study, Committee on the Downstream Effects of Agricultural Land Use, Committee on Integrated Catchment Management. Additional funding has been sought in the 1991-92 budget for research into water quality issues.

CROWN-OF-THORNS STARFISH

The damage to coral reefs caused by outbreaks to crown-of-thorns starfish is one of the most serious scientific and management issues on the Great Barrier Reef. In recent years there have been two distinct waves of outbreaks on the Great Barrier Reef, the first beginning in the early 1960s and the second in the late 1970s. Statistical analysis shows that $17\% \pm 4\%$ of all reefs in the Great Barrier Reef suffered outbreaks in the last episode. We are currently witnessing the decline of the second episode, with about 4% of reefs surveyed by the Australian Institute of Marine Science in 1989-90 having active outbreaks (compared with a peak of 16% in 1988-89). Both episodes have attracted widespread media coverage. The Authority's policy of not interfering on a large scale until it can be shown that outbreaks are caused or exacerbated by human activity has received intense public criticism in the past. However, every scientific review of this matter has supported the Authority's policy.

Outcomes

Significant achievements for the year have been:

- favourable review by Dr R Johannes of the research program conducted 1989-91
- a major workshop on 'Reproduction, Recruitment and Hydrodynamics in the Crown-of-thorns Starfish Phenomenon'
- rearing of juvenile starfish for field experiments on predation on early post-settlement stages
- observation and measurement (timing, extent, fertilisation rates) of mass spawning of the starfish on Davies Reef
- development of techniques for determining past currents on the Great Barrier Reef that might be used to explain past outbreak patterns
- statistical analysis of large-scale outbreak patterns
- increased cooperation and collaboration between researchers
- completion of or substantial progress in virtually all projects approved for the year.

Research directed to understanding causes of outbreaks has been slow because of the complexity of the issues, the prior need for fundamental biological and ecological information, logistical problems (e.g. lack of sufficient juvenile starfish for field experiments) and funding constraints. Research into geological aspects of the phenomenon has been slow due to sampling and dating difficulties.

A major problem for the coming year is the lack of large populations of crown-of-thorns starfish (both adult and juvenile) close to Townsville for field experiments.

The current funding program ceases at the end of 1991-92. It is essential that research continue until the causes of outbreaks are known. A review of the whole program will be made during 1991-92 to critically assess those elements

of the program which should continue.

The program of research for 1991-92 will comprise mainly continuing projects with the addition of new projects in the areas of larval and early juvenile nutrition, hydrodynamic modelling and testing of small- and large-scale hydrodynamic models.

EFFECTS OF FISHING

Community and conservation groups have for many years been concerned about the possible effects of trawl and line fishing on the environment. There is evidence from other areas e.g. from the North-West Shelf fish trawling that bottom trawling can have significant effects on the seabed communities and on the abundance of target species. Line fishing may also have direct effects on target species and indirect effects on reef communities. The combined effects of line and trawl fishing may also be important. However there are insufficient data for the Great Barrier Reef Region to determine these effects and their significance. This program, if funded, will attempt to determine the effects of trawl and line fishing and recovery from such effects. Other fisheries-related projects such as research into the relative effects of line and spear fishing will also be examined.

Outcomes

A multi-agency Advisory Committee on Research on the Effects of Fishing on the Great Barrier Reef Region has been established and a coordinator for the program appointed. An experimental research program has been designed to address the effects of trawl and line fishing and their combined effects on target species and reef communities in the Great Barrier Reef Region. CSIRO has designed an experiment to determine the effects of prawn trawling in the Far Northern Section of the Great Barrier Reef Marine Park. This experiment is expected to commence in November 1991. Specific projects on fishing issues arising from zoning plans and other management issues have commenced e.g. effects of spear and line fishing, conduct of a boat ramp survey of recreational fishing in the Great Barrier Reef.

The main problems in 1990-91 have been the lack of dedicated funding to commence the two main experiments; however the CSIRO has offered to commence the Far Northern Section prawn trawling experiment at its own expense using the *Southern Surveyor* in November 1991. A proposal for specific funding has been made in the 1991-92 budget.*

REEF MONITORING

The collection of long-term data sets through monitoring programs is essential in order that the natural temporal and spatial variation of the reef ecosystem might be estimated. The Authority may then be able to differentiate between the effects of human activity from natural variability. Data are needed on the abundance of representative reef organisms and magnitudes of variability in their population density and distribution. Data at various time-scales are

* \$1 million was provided for this program in the 1991-92 Budget.

necessary for assessing the effects of management strategies such as zoning and permits on the Great Barrier Reef ecosystem and on its uses. For example, monitoring the effects of zoning plans needs to be conducted over the life of a plan (5-7 years), whereas monitoring the impacts predicted from a development project needs in part to provide immediate triggers for management responses where impacts exceed defined limits.

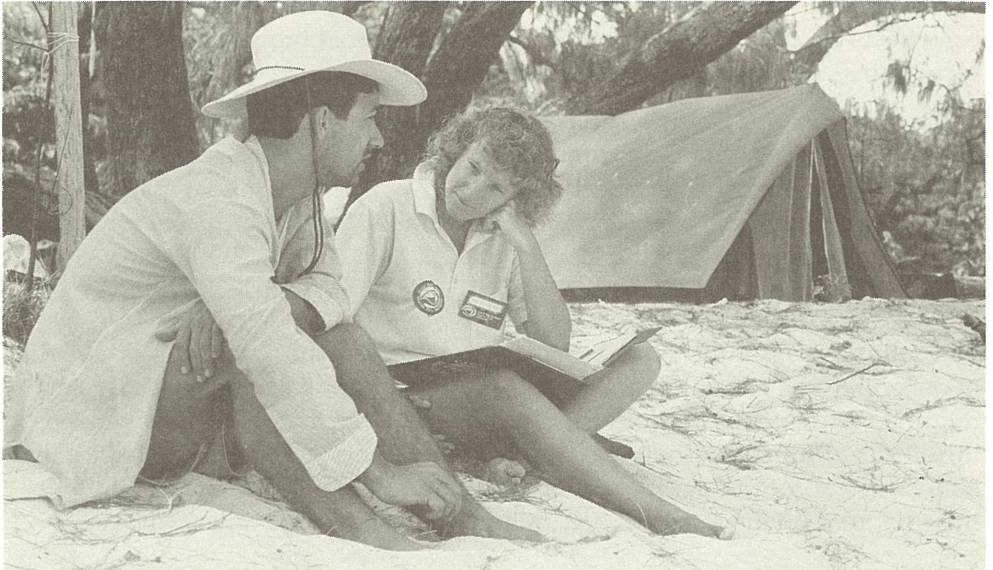
Outcomes

A number of monitoring projects were completed and others commissioned during the year. The main projects were spoil dump monitoring of the harbour dredging programs for the Cairns and Townsville Port Authorities, Far Northern Section dugong survey, survey of Cairns Section demersal biota, Heron Island harbour dredge spoil monitoring and Magnetic Quays monitoring. Surveys of reefs following Cyclone Ivor and Fitzroy River flooding were also conducted. The development of a reef-wide long-term monitoring program remains a priority for 1991-92. The Authority and the Australian Institute of Marine Science have agreed to develop a joint program for reef monitoring. Similarly the Marine Biology Department of James Cook University of North Queensland has made a formal approach to the Authority to establish a joint biological monitoring unit.

Emphasis will be placed during the coming year on in-house evaluation and development of programs and protocols for mariculture and tourism projects and on the development of a program for long-term, reef-wide monitoring.

HUMAN USE/SOCIAL IMPACT

The Great Barrier Reef Marine Park is a multi-use park and the pressure for use is increasing rapidly. The environment of the Marine Park includes the social and economic environment and the Authority in its decision making is required to take account of the mix of uses, the conflicts between different uses



Dr Lea Scherl, project leader, interviews a camper at Lady Musgrave Island in a study of recreational experiences which will assist future management planning.

and within the same use. The effects of growing uses and management decisions must take account of concepts such as amenity and social carrying capacity. Information and appropriate methodologies are required to determine use patterns, recreational experiences, attitudes and behaviour of reef users. Methods for assessing social impacts need to be developed.

Outcomes

This program has been enhanced by the recruitment of a social psychologist during the year. Two substantial projects were commenced: a Great Barrier Reef recreational experience study at Lady Musgrave Island and Reef and a survey of traditional marine conservation practices in the Far Northern Section. No progress has been made on the development of social impact assessment guidelines for environmental impact assessment. A serious deficiency in the Authority is the lack of a comprehensive and accessible data base on human use. These two problems will be addressed in 1991-92.

OCEANOGRAPHY

Understanding water movements in the Great Barrier Reef lagoon and the connections within and between reefs is important for zoning, environmental impact assessment and management planning. Validating hypotheses about sink-source relationships between reefs is important to contributing to the understanding of factors which govern the movement of larvae and recruitment of organisms to reefs e.g. crown-of-thorns starfish, corals, fishes. Understanding water movements is also critical to management of impacts from such things as sediments, oils spills and toxic metals.

Outcomes

The Marine Modelling Unit at James Cook University continued to provide excellent advice to the Authority on a variety of projects, including the spoil dump monitoring projects of the Cairns, Townsville and Mackay Port Authorities, Dallhold Nickel Management appeal and proposed offshore oil exploration assessment. A contract has been let with the Unit to further develop, as a Masters degree project, the model which describes hypothetical sink-source relationships between fish larval data.

TORRES STRAIT BASELINE STUDY

In July 1989, the Prime Minister announced, as part of his statement on the environment, that the Government would fund a four-year environmental study of the Torres Strait.

The study was instigated in response to concerns expressed by Torres Strait Islanders and commercial fishermen, about the possible effects on the Torres Strait marine environment of the current and potential mining developments in the region, particularly from the Ok Tedi and Porgera mines which discharge mine wastes into the Fly River catchment. The Fly River discharges into the Gulf of Papua. There is some movement of water and possibly heavy metals from the Fly River into the Torres Strait.

The study will collect data which will determine the current levels of heavy

metals in sediments, water and selected organisms in the Torres Strait marine environment and assist in determining whether there is evidence of heavy metal contamination of the marine environment from the mining operations. It should provide a basis for future management of the Torres Strait environment.

Outcomes

A coordinator, assistant coordinator (who is a Torres Strait Islander) and a scientific advisor have been recruited. Substantial progress has been made towards implementing the Baseline Study. A major conference 'Sustainable Development for Traditional Inhabitants of the Torres Strait Region' was held in Cairns in November 1990 to pool all available research information. An advisory committee of relevant experts and government representatives has been established and met three times. A pilot study to begin the collection and analysis program and to test field and laboratory protocols has been designed and should commence in July 1991, with a major field collection program commencing in October-November 1991.

Because of the complex arrangements which govern the management of the Torres Strait, a considerable amount of effort has been directed to the various committees which coordinate and decide policy and programs for the area. In addition the Authority has hosted representatives of the Indonesian Government at the conference and meetings of the advisory committee. The Baseline Study program has considerable credibility and support from scientific, Islander and government groups and is clearly regarded as a significant study with possible profound political, health, cultural and scientific implications. Maintenance of this credibility and support is essential. Additional funds have been sought in the 1991-92 budget to complete the pilot project.

OFFSHORE PETROLEUM EXPLORATION AND OIL SPILLS

The Authority has the responsibility of Scientific Support Coordinator to REEFPLAN, the marine pollution contingency plan for the Great Barrier Reef. This requires an understanding of the likely effects of an oil spill in the Great Barrier Reef Region, the distribution and significance of the resources that might be affected, the options for dealing with the spill and monitoring to assess impacts after a spill. In addition the Authority has been commissioned by the Prime Minister to conduct a preliminary environmental assessment of the impacts of petroleum exploration in marine areas adjacent to but outside the Great Barrier Reef Region.

The program of the Scientific Support Coordinator to REEFPLAN had the following objectives:

- to determine environmental priorities for REEFPLAN area
- to maintain a database of relevant scientific and technical information
- to develop a post-spill monitoring program
- to facilitate exchange of information through liaison, workshops and training.

Outcomes

Authority staff participated in a successful simulated oil-spill exercise. Procedures for dealing with a real spill were refined. Research into the effects of oil, dispersant and dispersed oil on Great Barrier Reef corals was carried out by staff at the Great Barrier Reef Aquarium. Two workshops were held on bioremediation and sea-bird cleaning. Support for REEFPLAN was provided from within existing staff resources. A major concern is the inadequacy of oilspill contingency plans for dealing with large spills e.g. in excess of 1000 tonnes. This is being addressed by the Australian Maritime Safety Authority. Nevertheless, this Authority believes that it is not possible to deal adequately with spills much in excess of 1000 tonnes except in ideal weather and logistic situations. Emphasis should therefore be put on preventing spills. The program concerning the impacts of offshore petroleum exploration had the following objectives:

- to review current information about physical and biological characteristics of the petroleum exploration areas proposed for release
- to review current information about oil spill prevention and cleanup technology
- to carry out risk assessment of the probability and severity of oil spills from exploration, production and transport in the exploration areas
- to make a preliminary assessment of the likely impacts of oil spills from exploration, production and transport.

Outcomes

Preliminary negotiations have been held with the Commonwealth Department of Primary Industries and Energy which has established a Steering Committee for this purpose. An outline of a preliminary assessment program has been drafted. Initial contact has been made with the Australian Petroleum Exploration Association.

RESEARCH PROGRAM MANAGEMENT

Efficient and effective management of the research program approved by the Authority, requires appropriate human resource and financial management systems and techniques. Good networks of contacts with the research community, user groups and within the Authority are essential to effective management of projects and application of research and monitoring results. Section staff must also contribute effectively to internal and external working groups, project teams and committees to enhance the Authority's operations, the effectiveness of Authority programs and the efforts of other agencies to address issues of common concern.

Outcomes

A total of 130 projects were managed during the year. Of these, 25 submitted final reports, 80 are continuing into 1991-92 and the remaining 25 are behind schedule. Efforts will continue to be made to obtain overdue reports and

complete the projects. 16 externally funded projects, principally monitoring projects for tourist developments were included. A computerised database for project management was completed.

Staff development appraisals have commenced and should be completed in July.

The first Corporate Plan for the Authority was developed. Collaboration with other Sections of the Authority was improved.

1991-92 Prospects

In 1991-92 priority will be given to :

- contributing to the development of a strategic plan for the Great Barrier Reef World Heritage Area
- developing and implementing a detailed water quality research and monitoring program (subject to the provision of funds in the 1991-92 budget)*
- developing a detailed research and monitoring program into the effects of fishing in the Great Barrier Reef Region (subject to the provision of funds in the 1991-92 budget)*
- developing a long-term reef-wide monitoring program
- critically examining, with other sections, information management requirements and developing an integrated database management system
- completing a pilot study for the Torres Strait Baseline Study
- completing the final year of the current Crown-of-thorns Starfish Program and critically evaluating further research and monitoring needs
- revising the contract arrangements for research.

* Provided in budget.

EDUCATION AND INFORMATION

Through the provision of education, information and advisory services and materials relating to the Great Barrier Reef Marine Park, the Education and Information Section's objective is to increase the knowledge and commitment of users and the public to the Great Barrier Reef Marine Park and the Authority, and to have the public support and undertake ecologically sustainable use of the Marine Park.

Therefore, the section's responsibility includes the following services:

- increasing community awareness of, and support for, Authority policies, programs and services
- encouraging public appreciation of, and responsibility towards, the Great Barrier Reef Marine Park so as to increase voluntary compliance with provisions of zoning and management plans
- supporting the work of all sections of the Authority through the design of publications, video and other audiovisual materials, acquisition of photographic images, and by providing media and library services
- cooperating with other government departments concerned with the Great Barrier Reef Marine Park to achieve the Authority's goal and aims
- disseminating information and educational services for the Authority
- encouraging community cooperation and participation in planning and managing the Great Barrier Reef Marine Park
- supporting community organisations, commercial and otherwise, in providing quality public information, education and advisory services about the Great Barrier Reef Marine Park.

PERFORMANCE INFORMATION

The **efficiency** of education, information and advisory services is assessed in relation to their cost and the extent to which they meet the client and the Authority's objectives by:

- compliance with project deadlines and budgets
- extent of utilisation of products and services
- average cost per unit area of zoned Marine Park.

The **effectiveness** of the section's activities is assessed by the extent to which they inform, satisfy, create awareness and/or enlighten the community about the Marine Park and the Authority as measured by:

- assessment of the level of support for services, i.e. demand for information, services and or products

- evaluation of target populations to assess levels of need, awareness, or satisfaction
- assessment of the increase in levels of compliance with zoning and management provisions and positive attitudes and values of the public concerning ecologically sustainable use of the Marine Park
- expert evaluation/opinion on the quality of GBRMPA products and services.

The Education and Information Section completed its approved program for 1990-91 and incorporated some additional high priority projects in that program. Most projects were within the budget estimates and total net expenditure including staffing costs was \$1,092,400, i.e. \$111,000 more than for 1989-90.

The cost of education and information services increased slightly over the previous year from a cost of \$2.98 per unit area of zoned Marine Park (adjusted to 1991 prices) to \$3.18 per unit for 1990-91. Income achieved by the Section increased by 7% over the previous year to \$92,000 for 1990-91.

Again there was an increase in the demand for services provided by the section compared with the previous year, including:

- 22% increase in written requests for Marine Park information
- 30% to 120% increase in library transactions including book and periodicals borrowing, inter-library loans and map borrowings.
- 20% increase in photographic image requests
- significant increases in media exposure, newsletter distribution and sales of materials.

Problems for the section stem largely from increased workload and from the need to compete for message delivery in a sophisticated, costly communications environment. The cost of television communication is great and restricts our potential use of the medium in the financial circumstances. Freight, postage and storage costs rose by 12% during the financial year and we are continually trying to economise in this area by refining mailing lists, taking advantage of Australia Post's special deal offers and reducing materials storage.

While we can function effectively enough under these constraints, it is recognised that restricted outcomes will result and limited service delivery and achievement of objectives is to be expected

We recognise the need for careful evaluation of markets, products and results of communication activities and the section will be attending to evaluation even more during the next financial year.

SECTION REVIEW

The section underwent an externally conducted review half way through the year. The reviewer concluded that more resources should be channelled into direct contact (extension) with users of the Reef, and that resourcing for

indirect contact through education and information services be redirected a little.

As a result, some changes were made to the section's structure and emphasis and better management practices have been put in place to promote efficiency and devolve responsibility. The section has been reorganised into three sub-units comprising the library, an extension unit of three full-time officers and one-part time officer and a production unit responsible for publications, displays, information and photographic services.

PRODUCTION OF NEW MATERIALS

In keeping with the section's objective, three major displays and a range of publications were produced for very different audiences.

Exposure to international audiences was achieved through displays on two occasions: at the IUCN General Assembly 1991 in Perth, and through a joint American-Australian Marine Sanctuary-Marine Parks Exhibition in association with the US National Oceanic and Atmospheric Administration (NOAA). The latter exhibition formed part of a celebration of NOAA's 20th birthday and will tour as many as eight American cities over an eight-month period.

Perhaps our most significant event was participation in the ABC Green Train exhibition. Travelling along the Queensland coast from Cairns to Brisbane over a three-week period, the Green Train attracted 236,000 visitors.



The Marine Parks exhibit on the ABC Green Train was especially popular with young visitors who could touch as well as look.

Significant work on publications included: preparation of zoning plans, maps and information for the Cairns Section review; development of a 'guide to common corals'; an information kit and calendar on coral spawning; a colour sales catalogue of publications and souvenirs available from the Great Barrier

Reef Aquarium shop; a Recreational Fishing Guide for Townsville waters (a joint production with the Queensland Department of Lands, SUNMAP); contribution to the Queensland Atlas (being produced by the Queensland Department of Information Services); production of two issues of *Undercurrents* (the State newsletter of the Marine Education Society of Australasia); and compilation of a special Great Barrier Reef Marine Park edition of *Issues* (an Australia-wide educational magazine about social and environmental issues for secondary students).

Recognition: Two of the section's existing publications received international recognition for 'excellence in interpretive communications'. *Discover the Great Barrier Reef Marine Park* won first place in the book category of the US National Association of Interpretation 1990 media awards. *Reflections* was placed second in the magazine category.

EXTENSION AND COMMUNITY EDUCATION

Tourist Operators

Tourist operator training courses on Reef interpretation and management were again conducted in Port Douglas, Cairns, Mission Beach, Townsville, Airlie Beach and Heron Island.

Over 200 people, representing 70 separate companies operating in the Reef region, attended these courses, held in conjunction with Q.NPWS. The objectives of these courses included developing a professional approach to the presentation of visitor interpretive services and increasing operators' understanding about managing the Marine Park. Each course covered resource information about the Reef, planning for interpretation, practical guiding skills, communication techniques and Marine Park management issues.

Commercial Fishing

A commercial fisheries consultant was contracted to assist in a number of industry educational and liaison projects. The program included continued development of liaison projects involving QCFO, Q.NPWS and QFMA. This process resulted in successful cooperation between the industry and the Authority for the Cairns Section zoning review and other special management areas.

The second and third editions of the free video program *Deckhand* were produced and distributed to Queensland commercial fishermen. The main goal of the video program is to communicate management and conservation messages to fishermen in an entertaining and attractive way. Industry feedback was very positive and suggestions on future content have been implemented to improve this information service.

The consultant also provided base data for a volunteer trawl catch-effort program for the Marine Park and assisted in planning and conducting a successful Fishermen's Fair in Townsville attended by over 12,000 people. There was considerable advice and assistance provided to Authority management staff on a range of issues involving commercial fishing.

Recreational Fishing

Five 30-second television advertisements about recreational fishing in the Marine Park were produced and broadcast extensively along the North Queensland coast. These advertisements on litter, anchor damage, zoning, overfishing and green zones, aimed to increase public awareness of anglers to 'do the right thing' and conserve and protect the Reef environment. A University of Queensland evaluation of the campaign found there were high levels of recall and positive effects from this user group towards the messages. In conjunction with the television advertising, press advertising in local papers, public meetings, production of a Townsville recreational fishing guide and a direct mail campaign to all private boat owners in Queensland promoting zoning plan maps were undertaken to educate anglers about many issues affecting their activities in the Marine Park.

These productions and liaison services were conducted jointly with other management agencies including the Q.NPWS, QDPI, QFMA, QBFP, Sunmap and Queensland Sports and Recreational Fishing Council. Considerable positive feedback was provided to all agencies on a range of issues concerning recreational fishing in the Marine Park. Most anglers surveyed in the University of Queensland evaluation said they believed the Marine Park was being properly managed (61%) and just over half of them had a copy of a zoning plan map (52%).

Recognition: The 'Fish for the Future' education and extension campaign was recognised nationally as Australia's best external campaign from a government or private organisation by the Society of Business Communicators, and received a Gold Serif Award in June.

Seaweek

The Section continued to support the Marine Education Society of Australasia (MESA) by conducting Seaweek '91. The national theme was 'Fish for the Future' focusing on fisheries management and conservation issues.

Over 30,000 people participated in Queensland - a threefold increase over last year - with 15 local coordinating committees from Port Douglas to Surfers Paradise.

A special poster, an educational booklet and a community service TV announcement helped promote this campaign extensively through the Queensland media. A range of Seaweek activities included public seminars, beach clean-ups, tag and release fishing competitions, displays, open days and essay competitions. Most marine scientific, management, conservation and educational groups joined in, from the public and private sector, to participate in this community awareness campaign.

Education officers held regional meetings with MESA members in Queensland and helped produce two issues of the State newsletter *Undercurrents* about marine education and conservation issues.

Community Assistance

The Reef Education Development Scheme again assisted community organisations to develop innovative educational projects about the Marine Park including:

DIVE OPERATORS TRAINING COURSE

Employment of a consultant in Cairns to plan and conduct a series of Reef biology courses for dive operators (\$920)

DIVE OPERATORS REEF EXAM

Examination Course for dive instructors at Mike Ball Watersports (\$1000)

CORALS IDENTIFICATION GUIDE

Development of a corals identification poster for visitors to the Reef (\$2200)

REEF MONITORING PROGRAM

Grant to North Rockhampton High School to monitor the effects of tourism and recreation on Middle Reef at Keppel Island (\$1850)

PENINSULA REGION MARINE STUDIES

Grant to develop teacher resource materials and aquariums for a schools marine studies program (\$3000)

REEF TOURIST VIDEO

Production of an educational video about the Marine Park for Quicksilver's Reef Biosearch group at Port Douglas (\$3000)

MANGROVE FIELD GUIDE

Grant for production of a field guide book about the importance of mangroves for the Reef environment (\$1000).

Freedom of Information

The Authority received no requests for information under the *Freedom of Information Act 1982* (FOI).

The Authority maintained its updated documentation called for under sections 8 and 9 of the FOI Act, and its regular reporting. Documents available to the public are listed in Appendix D.

MEDIA AND PUBLIC COMMUNICATIONS

The public communication program resulted in widespread regular media coverage of the work of the Authority.

Media and general public interest in the Marine Park continued to grow during the year. This was indicated by a 27.7% increase over the previous year in the frequency of publication and broadcasts of news and information about the Marine Park and its management.

Commercial radio stations along the Queensland coast have given solid support to the regular broadcast of a daily series of programs about the Great Barrier Reef.

The video magazine *Reef Report* continues to provide a valuable communications vehicle for information and news about the Marine Park and its management.

LIBRARY

The aim of the library is to provide facilities for an efficient and effective information service in support of the corporate goals of the Authority and its staff. This is achieved through the provision of a comprehensive reference service using the library's collection of journals, monographs, maps, aerial photographs, and slides as well as literature searches carried out on a variety of databases.

The library has experienced considerable growth in demand in many areas during the last year. Comparisons between 1989-90 and 1990-91 show internal loans to staff have increased by 88%. External usage of the library and outside requests for information have both increased by 30%. In order to meet the increasingly multidisciplinary needs of the staff, the library has drawn heavily on the resources of other libraries nationwide, despite the increased cost of such inter-library loans. Staff requests for these inter-library loans have increased by 110% over the last year. To increase the speed and efficiency of this service many requests are now sent through the electronic mail system ILANET.

New demands for current information have resulted in the library joining the DIALOG group of online databases. Literature searches are now possible on both Australian and international databases through AUSTRALIS, and the DIALOG Group. The REEF database continues to be jointly managed by the librarian and CSIRO, and to be heavily used by Authority staff.

The library monograph collection continues to grow, with 2500 monographs currently being in the library's computerised catalogue. A recent acquisition is a complete set of the transcripts of the Proceedings of the Royal Commission on Great Barrier Reef Petroleum Drilling, 1972. The findings of this Royal Commission led to the establishment of the Authority and the Great Barrier Reef Marine Park.

A new librarian was appointed to the Authority in September 1990.

AQUARIUM

The Great Barrier Reef Aquarium has been operating for four years since opening on 24 June 1987. The Aquarium was developed as part of the Great Barrier Reef Wonderland Bicentennial Commemorative project, which was conceived by the Authority's chairman Mr Graeme Kelleher. The Aquarium's objective is to enhance community understanding, appreciation, experience of and support for the Great Barrier Reef, the Marine Park and the Authority by providing a readily accessible onshore reef environment and interpretive facilities.

Great Barrier Reef Wonderland incorporates a branch of the Queensland Museum concentrating on the natural sciences, culture and development of North Queensland and features specialist exhibits relating to the Great Barrier Reef.

An Omnimax cinema and commercial centre of shops, offices, food outlets and charter boat services were developed with private sector funding. High speed catamarans provide a service to Magnetic Island and the Great Barrier Reef.

The Aquarium features a coral reef system incorporating a walk-through viewing tunnel that provides a reef experience which is both fascinating and realistic, and stimulates the visitor to further explore the Great Barrier Reef. The Aquarium is operated by the Authority on a full cost-recovery basis.

PERFORMANCE INFORMATION

The extent to which the Aquarium met its objective in the past year is assessed in terms of the following performance indicators:

Maintenance of Exhibits and Services

A number of new exhibits, both permanent and short-term features, were produced during the year.

An improved exhibit describing zoning in the Marine Park was developed. This was funded by the Authority with a budget of \$10,000.

'Fish for the Future' was developed in conjunction with Seaweed celebrations and promoted commercial and recreational fisheries management.

A mangrove exhibit featuring a live display provided a fascinating interpretation of this important ecosystem.

An innovative shark exhibit looked at the world from a shark's perspective.

A pollution tank was produced to show the visual effects of litter on the reef.

A box jellyfish exhibit was developed. This has become famous because it is the first time that one has been kept in captivity from juvenile stage to maturity.

An ongoing sponsorship from Quicksilver Connections Pty Ltd, Port Douglas, enabled further development of the Quicksilver Discovery Room including turtle incubators and nursery and a 'close-up' live coral exhibit. The room is an educational facility for school children, featuring microscopes, small aquariums, display cases and a variety of 'touch' exhibits.

Another first, was the successful breeding of sea snakes (*Lapemis hardwickii*).

A plankton culture facility was also developed to meet the feeding requirements of a greater range of ancillary exhibit animals.

The coral reef tank was maintained in excellent health despite salinity and nutrient level problems as a result of record wet season rain from December to March. This was due mainly to the ongoing improvements in the efficiency of the Aquarium's life support systems.

The predator display tank was improved by several new additions including a coach-whip ray, a shark ray and a shovel nosed ray.

Aquarium volunteers assisted in producing the exhibits and a number of local businesses provided sponsorship.

The exhibit area is now four years old and much of the exhibit work this year also focused on upgrading present displays and redesigning and replacing over 70 lightboxes.

A new, full-colour brochure was produced with generous sponsorship from Townsville Rotary.

A redesigned membership program emphasises exciting field trips and talks by special guests. New activities in the program included sleepouts for children, children learning how to make their own 'Reef Reporters' videos, and a mangrove-rainforest excursion to Hinchinbrook Island, the world's largest island national park.

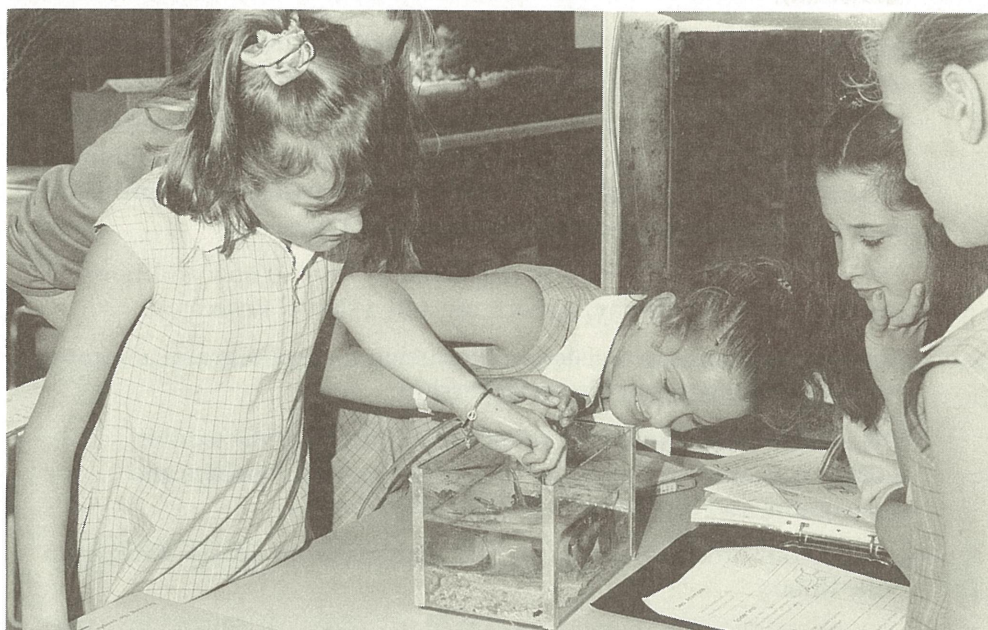
A further volunteer training course was conducted in April 1991 bringing to approximately 200 the number of people who have become Aquarium volunteers since the program started in October 1987. This year the volunteers formed their own organisation — the Great Barrier Reef Aquarium Volunteers Association of Townsville Incorporated. This gives the volunteers legal status for fundraising activities and is consistent with the intention that they have maximum say in their own organisation and affairs. Volunteers have raised funds to finance the building of an Aquarium trailer which allows them to promote the Aquarium at events such as the boat show, fetes, field days. During the year the volunteers developed a six-week marine biology course

open to the general public. The course is also a means of generating revenue for the volunteer activities.

Visitor services were considerably developed this year as guiding staff expanded their repertoire of talks and tours. Volunteers and staff instigated weekend and school holiday activities for the public. These programs and additional services have proven to be very successful.

Consistent development of school programs over the past three years is reaping its rewards. Over 8000 school children visited the Aquarium this year and more than 60% of the local schools made use of the facility.

Development of discovery trails allows teachers and parents to take educational safaris through the Aquarium with little assistance from staff. Other programs entail complete involvement with Aquarium guides and volunteers assisting as in-house resource people.



The special facilities of the Quicksilver Discovery Room enable school children to learn 'hands on'.

An increasing number of teachers have incorporated a visit to the Aquarium as an integral part of their school work programs. Teachers are involved with many aspects of program development. Year 12 science teachers have developed a science laboratory for students of multi-strand science, in collaboration with Aquarium interpretive and curatorial staff.

The Aquarium education program is also catering to students with high aspirations in marine science by offering a number of special research projects. These projects aim to fulfil some research needs of the Aquarium and the Authority, whilst providing research opportunities for students.

Public Impact

Around 200,000 people visited the Aquarium during 1989-90. The following indicators suggest that the Aquarium is continuing to have a significant positive effect on public awareness and understanding of the Great Barrier

Reef and the Marine Park concept:

- more informed inquiries to the Authority
- favourable feedback from educational institutions about student reactions
- reports from Reef tourist operators that clients who have visited the Aquarium have been noticeably more knowledgeable about the Reef and the need to use it wisely
- widespread community support through the membership and volunteer schemes.

Achievement of cost recovery

Several factors had an adverse effect on tourism in North Queensland in 1990-91 including the Gulf War and the resultant high fuel prices, the economic recession and a record wet season with severe flooding along the eastern coast.

As a result of continuing tight financial management and very little expenditure on new equipment or displays, most day-to-day operating costs were able to be met from revenue from admissions and the Aquarium shop. However, an operating deficit of approximately \$300,000 was incurred and, in addition, there were no funds available to be set aside for depreciation of fixed assets.

This deficit has been covered by the \$1 million commercial loan approved by the Department of Finance in 1989-90.

Management Improvement

In November 1990 the Authority commissioned Kayt Raymond and Associates to conduct a management review of the Aquarium's operations. As a result of that review several initiatives were undertaken to improve the Aquarium's management and business performance. These included a staff appraisal and development system, improved internal and external communications, strategic business and marketing plans, a reputation-building program, a network-marketing system and the development of new business activities.

ADMINISTRATION

The section is part of the corporate management and services program, the objective of which is to achieve cost-effective delivery of programs by providing management services and administrative support to the Minister, the Authority and its staff.

Administration's responsibility covers the following corporate services:

- personnel management
- finance management
- general services including property, stores and records management.

The objective of the sub-program requires continual development of an appropriate infrastructure for operations.

Within the limits of Authority direction and regulation, the section seeks to meet particular operating needs through informality and simplification of procedures and systems.

The **efficiency** of corporate services is assessed in relation to their cost and the extent to which they comply with and meet Authority and external requirements, as measured by the:

- management of Average Staffing Levels (ASL) - % variation
- management of financial resources - % variation
- cost of the support services in relation to the Authority's overall outlays - time/cost for key tasks or services, e.g. payment of accounts, recruitment
- compliance with standards of quality - as reflected by audit findings.

The **effectiveness** of the corporate services is assessed by the extent to which the administrative infrastructure is adapted to support all programs and central resource management requirements as measured by:

- the degree of 'client' satisfaction with the standard of each service
- the timeliness of the implementation of Authority policies and decisions
- implementation of government policies and directives that flow from government decisions
- resource usage outcomes
- the provision of an equitable and participative work environment
- providing training and development opportunities which enable staff to achieve their full potential and acquire the expertise and flexibility to meet changing requirements

HUMAN RESOURCE MANAGEMENT

Outcomes for the year in the management of staffing resources and expenditure on salaries and related costs were satisfactory when increasing demands upon programs and the higher than usual number of paid inoperative staff are taken into account.

Authority staffing as at 30 June 1991 is set out in Table 10.

The ASL for budget-funded operations in 1990-91 was 84.17, which includes staffing for other Authority services such as the Torres Strait Baseline Study (2 ASL) and the External Advisory Section (1 ASL).

The total salaries and related costs expenditure on budget-funded operations was \$3,025,747, this being \$159,747 above the initial estimate through provision for inoperative staff. The total salaries and related costs expenditure on non-budget-funded operations including the Great Barrier Reef Aquarium was \$943,793.

The staffing costs of the Aquarium are not funded through parliamentary appropriation but are met from Aquarium revenues on a cost-recovery basis.

During the year 14 permanent staff (16%) left the Authority compared with 12 permanent staff (14%) in 1989-90. Eleven permanent staff were recruited during the year. Efforts to reduce staff turnover through improved career path structures and a greater emphasis on staff development continue.

Equal Employment Opportunity

The Authority's commitment to Equal Employment Opportunity (EEO) was demonstrated through information dissemination, personnel policies in relation to conditions of employment, recruitment and selection procedures and in the provision of staff development.

The Authority's EEO Program was revised during the year prior to submission to the Public Service Commission for approval by the Public Service Commissioner.

The Chairman and Executive Officer are the senior executives responsible for EEO. The Manager, Personnel and General Services (ASO 6) is the EEO Coordinator. The Administration Section's contribution to EEO and its implementation involves approximately 0.5 staff years.

There was one EEO-related grievance during the year.

EEO data for the Authority's staff is provided in Tables 6,7,8 and 9.

The Authority aims to have target group representation in its staffing reflect the representation of those groups in the population of the Great Barrier Reef Region of the Queensland coast. Representation of EEO Target Groups within the Authority's staffing is comparable to service wide data, although the proportion of Aboriginals and Torres Strait Islanders in the Authority's staff is less than in the population of the Great Barrier Reef Region. Action to increase the representation of this group continues.

**TABLE 6
REPRESENTATION OF EEO GROUPS WITHIN OCCUPATIONAL GROUPS
AS AT 30 JUNE 1991**

SALARY	TOTAL NO OF STAFF	WOMEN	NESB1	NESB2	ESB	ATSI	PWD	STAFF WITH EEO DATA
SES	2	0 0%	0 0%	0 0%	2 100%	0 0%	0 0%	2
ASO & related	108	54 50%	5 5%	4 4%	95 91%	3 3%	8 8%	104
GSO & related	8	1 13%	0 0%	0 0%	7 100%	0 0%	1 14%	7
Professional	6	3 50%	0 0%	1 17%	5 83%	0 0%	0 0%	6
Technical	6	2 33%	0 0%	0 0%	5 83%	0 0%	0 0%	6
TOTALS	130	60 46%	5 4%	5 4%	114 91%	3 2%	9 7%	125

Note: Percentage for women based on total staff; percentages for other groups based on staff with available EEO data

SOURCE: Data retrieved from GBRMPA EEO Database

**TABLE 7
REPRESENTATION OF EEO GROUPS WITHIN AUSTRALIAN PUBLIC SERVICE**

	TOTAL NO OF STAFF	WOMEN	NESB1	NESB2	ESB	ATSI	PWD
TOTALS	134935	61578 46%	6586 5%	10192 8%	76491 57%	1646 1%	6098 5%

Figures shown are for those staff with data recorded in the Continuous Record of Personnel at December 1990

SOURCE: APS Statistical Bulletin A 1990

**TABLE 8
REPRESENTATION OF EEO GROUPS WITHIN THE POPULATION OF
THE GREAT BARRIER REEF REGION**

	TOTAL POPULATION	WOMEN	NESB1	NESB2	ESB	ATSI	PWD
TOTALS	741075	361298 49%	75950 10%	118415 16%	546710 74%	36317 5%	119300 16%

SOURCE: Data supplied by the Australian Bureau of Statistics from 1986 Census

KEY	NESB1	Non-English Speaking Background, first generation
	NESB2	Non-English Speaking Background, second generation
	ESB	English Speaking Background
	ATSI	Aboriginal or Torres Strait Islander
	PWD	People with a disability
	ASO	Administrative Service Officer
	GSO	General Service Officer

TABLE 9

**REPRESENTATION OF EEO GROUPS WITHIN SALARY LEVELS
AS AT 30 JUNE 1991**

SALARY	TOTAL NO OF STAFF	WOMEN	NESB1	NESB2	ESB	ATSI	PWD	STAFF WITH EEO DATA
Below \$22167 (includes ASO 1)	18	16 89%	0 0%	1 7%	14 93%	2 13%	1 7%	15
\$22167 to \$25060 (includes ASO 2)	27	17 63%	1 4%	0 0%	24 92%	0 0%	2 8%	26
\$25061 to \$27780 (includes ASO 3)	13	10 77%	0 0%	2 15%	11 85%	0 0%	0 0%	13
\$27781 to \$31150 (includes ASO 4)	6	2 33%	2 33%	0 0%	4 67%	0 0%	1 17%	6
\$31151 to \$33930 (includes ASO 5)	12	5 42%	0 0%	1 8%	11 92%	0 0%	1 8%	12
\$33931 to \$39700 (includes ASO 6)	29	5 17%	1 3%	0 0%	27 96%	1 4%	4 14%	28
\$39701 to \$44435 (includes SO Gd C)	13	3 23%	1 8%	1 8%	11 85%	0 0%	0 0%	13
\$44436 to \$52100 (includes SO Gd B)	10	2 20%	0 0%	0 0%	10 100%	0 0%	0 0%	10
Above \$52100 (includes SES)	2	0 0%	0 0%	0 0%	2 100%	0 0%	0 0%	2
TOTALS	130	60 46%	5 4%	5 4%	114 91%	3 2%	9 7%	125

TABLE 10

STAFF OF THE AUTHORITY AT 30 JUNE 1991

	Operative	Permanent	Temporary	Total
Townsville	Executive and Secretariat	5		5
	Research and Monitoring	11	4	15
	Planning and Management	15	1	16
	Environmental Impact Management	15		15
	External Advisory	1		1
	Education and Information	12	2	14
	Administration	10	2	12
	Aquarium	13.88	10.63	24.51
	Total Townsville	82.88	19.63	102.51
Canberra	Executive	2		2
	Support	3		3
	Total Canberra	5		5
	Total June 1991	87.88	19.63	107.51
	Total June 1990	89.6	11.97	101.57
	Inoperative			
	Leave with pay	2		2
	Leave without pay-public interest	3		3
	Leave without pay-private	6		6
	Total	11		11

Industrial Democracy

The process for staff involvement in decision making within the Authority continues to develop. It has always been recognised that while the ultimate responsibility for management lies with the Authority, effective management will be enhanced through the involvement in and the commitment of staff to the decision-making process. This requires the involvement of staff in consultations which:

- allow staff to fully apply their skills and experience
- recognise the dignity of all staff
- provide all staff with the opportunity to influence decisions which affect the quality of their working lives.

Occupational Health and Safety

A full-time Occupational Health and Safety officer was appointed to the Authority's staff during the year. The appointment of this officer will enable the continuing enhancement and development of occupational health and safety practices within the Authority and the maintenance of the Authority's historically excellent workers compensation record.

The Authority continues to provide its staff with access to the services of professional counsellors through an Employee Assistance Program agreement with Interlock Townsville.

Staff Development

Major staff development initiatives undertaken during the year were the implementation of a Staff Development Appraisal Scheme (which functions as a guided self-appraisal process) and a Middle Management Development Program.

FINANCIAL MANAGEMENT

In 1990-91 Parliament appropriated \$10,164,000 for the Authority's programs, other than the Great Barrier Reef Aquarium. Additional funds amounting to \$2,117,248 were carried forward from the 1989-90 financial year and applied towards 1990-91 activities. Under the cost-sharing arrangements for the day-to-day management of the Marine Park, an amount of \$2,586,000 was received from the Queensland Government during the year. Receipts from other sources including interest, permit assessment fees, contribution for baseline and monitoring studies and the sale of education materials amounted to \$1,368,616 and earnings of \$1,651,902 by the Aquarium.

Program expenditure for the year, other than expenditure on the Great Barrier Reef Aquarium, amounted to \$13,888,079 or 91% of funds available. Expenditure of \$1,951,452 on the Great Barrier Reef Aquarium program was met from its income generating activities. Full details are provided in Appendix I Financial Statements.

The expenditure of funds for all programs is shown in Figure 4. These expenditures include the allocation of salaries and certain overheads to each program.

GENERAL SERVICES

The cost of corporate services in 1990-91 was \$1,759,356 which represents 12.6% of the Authority's expenditure (excluding the Great Barrier Reef Aquarium) compared with 13.3% in 1989-90 and 13.6% in 1988-89.

The use of Australian Government Corporate Credit Cards was expanded to take advantage of the efficiencies to be gained from this initiative. Adequate controls are in place to ensure the proper use of the cards.

CONSULTANTS

During the year Kayt Raymond and Associates provided the Authority with consultancy services for:

- Education and Information program review. Total cost \$19,350.
- Aquarium program review. Total cost \$25,762.
- Implementation of Staff Development Appraisal Program.
Total Cost \$17,598.

Interlock Townsville provided training services for the Authority's Middle Management Development Program at a total cost of \$3000.

SUMMARY OF PERFORMANCE INFORMATION

In terms of expenditure, estimates of program requirements in 1990-91 were largely met. The carryover includes unfilled orders/contracts and unspent monies for industry funded baseline and monitoring studies.

The review of available Financial Management Information systems (FMIS) for the Authority was well advanced in 1990-91. The purchase and installation of the new FMIS is scheduled for early 1991-92.

Figure 4. EXPENDITURE OF FUNDS BY PROGRAM 1990 - 91
(Total expenditure \$15,839,531)

	BUDGET FUNDED	OFF BUDGET
Planning and Management	7,225,546	
Environmental Impact Management	1,038,926	
Research and Monitoring	2,473,202	
Education and Information	1,341,454	
External Advisory Services	49,595	
Corporate Management and Services	1,759,356	
Sub Total	13,888,079	
GBR Aquarium		1,951,452
TOTAL		15,839,531

The office is part of the corporate management and services program of the Authority. This program's objective is to achieve efficient and cost-effective delivery of programs by providing executive management and administrative support to the Minister, the Ministerial Council, the Authority and its staff. The office provides day-to-day advice to the Minister and liaises with other departments on legal, financial and policy matters that relate to the Marine Park.

PERFORMANCE INFORMATION

Efficiency is defined as the quality and timeliness of advice and correspondence to the Minister, Ministerial Council, Chairman, Parliamentary Committees and other organisations.

Effectiveness is measured by the:

- extent to which statutory, Ministerial and Ministerial Council requirements are met
- extent to which Authority goal and aims are taken into account by other Government organisations
- extent to which assistance is provided to implement Authority programs being undertaken by other sections.

AMENDMENT OF THE GREAT BARRIER REEF MARINE PARK ACT AND REGULATIONS

The office assisted in preparing changes to legislation.

An amendment to the Act will introduce a system of compulsory pilotage for vessels 70 metres and over in length, and all loaded oil tankers, chemical carriers or liquefied gas carriers irrespective of size, whereby they are required to take a pilot when navigating the northern inner route of the Park and Hydrographers Passage which is off Mackay. This amendment is aimed at reducing the risk of shipping accidents and consequent environmental damage in the Great Barrier Reef Region.

The Regulations were amended to extend the imposition of permit assessment fees to cover not only applications for the operation of tourist programs, but to all permitted activities of a 'commercial nature'.

Another Regulation amendment will provide for improvements in the handling of the permit decisions.

COORDINATION

The office was involved in the following activities:

- organising the 16th meeting of the Great Barrier Reef Ministerial Council in Cairns on 10 August 1990
- organising the 17th meeting of the Great Barrier Reef Ministerial Council in Brisbane on 28 February 1991
- assisting DASETT in assessing policy issues for the 18th General Assembly of the IUCN held at Perth in November -December 1990
- assisting DASETT in support of working groups on ecologically sustainable development related to tourism, fisheries and agriculture
- cooperating with DASETT and the Australian National Parks and Wildlife Service toward the establishment, in conjunction with State and Territory Governments, of a representative national system of marine protected areas
- supporting the Chairman of the Authority in his role as Vice-Chairman (Marine) of IUCN's Commission on National Parks and Protected Areas; in parallel to the Australian effort mentioned above, pursuing the goal of a global representative system of marine protected areas by coordinating working groups in each of the world's major marine realms.

INTERNATIONAL EXCHANGE

During 1990-91 the Assistant Executive Officer for the Canberra Office participated in a one-year staff exchange between Australia and Canada. The responsibilities of the Canberra position were assumed by Mr Bruce Amos, a senior manager with the Canadian Parks Service.

EXTERNAL ADVISORY SERVICES

The section objective is to facilitate the provision of environmental management advice and technical cooperation and development assistance to approved national and international programs and projects outside the Great Barrier Reef Marine Park on a full cost recovery basis. The sub-program aims to foster conservation and sustainable use of tropical coral reef, marine and coastal resources nationally and internationally. It will draw on a cadre of qualified and experienced professional staff from within the Office of the Authority and its associated agencies.

Although the Authority has provided ad-hoc external assistance since 1985, a dedicated section was only established in October 1990 with the appointment of an assistant executive officer to direct the program. It will implement the Authority's function to provide assistance in environmental management established under section 7A of the *Great Barrier Reef Marine Park Act 1975*.

In order to more accurately reflect the function of the section, it will be renamed the 'External Services' Section in the new year.

The section's objectives for the first year of operation were to:

- develop a business plan
- develop operational parameters with other sections of the Authority and its associated agencies
- establish an in-house professional skills and experience database
- establish and maintain liaison with national and international project commissioning and implementing agencies
- respond to requests for assistance and advice.

Performance Information

Not all these objectives were attained although progress has been made in each area. The principal constraint was the lack of support staff which meant that activities pertaining to internal procedures development ceased whenever external projects demanded staff time. Since establishment of the section, the Authority has:

- completed three external assistance projects — for the Australian Centre for International Agricultural Research (ACIAR) assessing the use of remote sensing in the South Pacific; for the IUCN - the World Conservation Union and the Asian Development Bank (ADB) providing resource inventory input for the Fiji National

Environmental Strategy Project; and for the South Australian Centre for Remote Sensing [SACRS] assisting Malaysian marine park management plan development

- agreed to participate in the International Development Program (IDP) of the Australian Universities project team to develop marine sciences education in Indonesian Universities to commence in 1991-92
- signed a memorandum of understanding with the United Nations Environment Program (UNEP) to *inter alia* provide preparatory project assistance to the Global Resource Database (GRID) Pacific project
- commenced inventory of the Office of the Authority staff professional skills and experience
- commenced registration with national and international implementing and donor agencies
- provided secretariat services to the recently established Queensland Marine Parks Consultative Committee (see page 16).

Given the preparatory nature of this year and the staff constraint the section has been reasonably successful in the achievement of its program.

AUTHORITY FUNCTIONS

The functions of the Authority, defined in sections 7 and 7A of the Act, as amended in December 1988, are as follows:

- (a) to make recommendations to the Minister in relation to the care and development of the Marine Park including recommendations, from time to time, as to -
 - (i) the areas that should be declared to be parts of the Marine Park; and
 - (ii) the regulations that should be made under this Act;
- (b) to carry out, by itself or in co-operation with other institutions or persons, and to arrange for any other institutions or persons to carry out, research and investigations relevant to the Marine Park;
- (c) to prepare zoning plans for the Marine Park in accordance with Part V;
- (ca) to furnish information and advice to the Minister in respect of matters relating to the Marine Park, including -
 - (i) information and advice in relation to any agreement (including any proposed agreement) between the Commonwealth and Queensland on such matters;
 - (ii) information and advice on the following matters:
 - (A) whether the Commonwealth should grant financial assistance to Queensland in respect of a matter relating to the Marine Park;
 - (B) the amount and allocation of such assistance;
 - (C) the terms and conditions (if any) on which such assistance should be granted; and
 - (iii) information and advice on the following matters:
 - (A) whether it is desirable that Queensland should make a payment to the Authority in respect of a matter relating to the Marine Park;
 - (B) the amount and allocation of such payment;
 - (C) the terms and conditions (if any) on which such payment should be given;
- (cb) to receive and disburse moneys appropriated by the Parliament for payment to the Authority for the purpose of payment of the moneys to Queensland by way of financial assistance to Queensland in respect of matters that relate to the Marine Park;

- (cc) to receive and disburse moneys paid to the Authority by Queensland under an agreement between -
 - (i) the Commonwealth and Queensland;
 - (ii) Queensland and the Authority; or
 - (iii) the Commonwealth, Queensland and the Authority;
 - (cd) to provide, and arrange for the provision of, educational, advisory and informational services relating to the Marine Park;
 - (d) such functions relating to the Marine Park as are provided for by the regulations;
 - (da) to provide assistance to other institutions and persons in accordance with section 7A; and
 - (e) to do anything incidental or conducive to the performance of any of the foregoing functions.
- (1A) For the purposes of this section but without limiting the generality of paragraph (1) (ca), (cb) or (cd), a matter shall be taken to relate to the Marine Park if it relates to -
- (a) the use or management of an area (which may be a Queensland national park or a Queensland marine park) the use or management of which would or might affect the Marine Park; or
 - (b) the use of a place outside the Marine Park for a purpose relating to the Marine Park.
- (1B) The Authority is responsible for the management of the Marine Park.
- (2) The Authority shall perform its functions in accordance with any general directions given by the Minister not inconsistent with this Act.
- (3) The Authority shall include in each report prepared under section 63M of the Audit Act 1901 particulars of any directions given by the Minister under sub-section (2) during the period to which the report relates.
- 7A (1) Subject to this section, the Authority may, at the request of another institution or person, provide assistance to the institution or person in matters relating to environmental management.
- (2) The assistance may be provided by the Authority acting by itself or in co-operation with other institutions and persons.
- (3) Without limiting the generality of the assistance that may be provided, the assistance may take any of the following forms:
- (a) the carrying out of research or investigations;
 - (b) the provision of educational, advisory or informational services;
 - (c) the making available of facilities.

- (4) The Authority shall not perform a function that the Authority has only because of this section unless the Minister has approved, in writing, the provision of the assistance concerned.
- (5) The Minister shall not give an approval under subsection (4) unless the Minister is satisfied that the provision of the assistance concerned is not likely to affect adversely the performance of the functions of the Authority conferred by other provisions of this Act.
- (6) An approval under subsection (4) may be given subject to conditions or restrictions set out in the instrument of approval (including conditions requiring the charging of fees).
- (7) Nothing in this section limits the functions that may be conferred on the Authority by the regulations.

APPENDIX B

CONSULTATIVE COMMITTEE FUNCTIONS

The functions of the Great Barrier Reef Consultative Committee, defined in section 21 of the Act, are as follows:

- (a) to furnish advice to the Minister, either of its own motion or upon request made to it by the Minister, in respect of matters relating to the operation of this Act; and
- (b) to furnish advice to the Authority in respect of matters relating to the Marine Park, including advice as to the areas that should be parts of the Marine Park, referred to it by the Authority.

APPENDIX C

AUTHORITY SENIOR OFFICERS

Mr Graeme Kelleher, AM (Chairman)

Townsville Office:

Dr Don Kinsey (Executive Officer)

Dr Wendy Craik (Assistant Executive Officer, Planning and Management)

Kath Shurcliff (Assistant Executive Officer, Environmental Impact Management)

Simon Woodley (Assistant Executive Officer, Research and Monitoring)

Ray Neale (Assistant Executive Officer, Education and Information)

Ian Burston (Assistant Executive Officer, Aquarium)

Ross Hebblewhite (Assistant Executive Officer, Administration)

Dan Claasen (Assistant Executive Officer, External Advisory Services)

Canberra Office:

Peter Ottesen (Assistant Executive Officer) - on exchange to the Canadian Parks Service

Bruce Amos (Acting Assistant Executive Officer) from September 1990 to July 1991- on exchange from the Canadian Parks Service

PUBLICATIONS

WORKSHOP SERIES (ISSN 0156-5842)

Workshop on the Role of Scientific Support Co-ordinator(SSC) in Oil Spill Response.

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Fringing Reef Workshop: Science , Industry and Management. C L Baldwin (ed). Townsville, GBRMPA, 1987. (Workshop Series No. 9) 280p. ISBN 0 642 52633 8

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ISBN 0 642 52409 2

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Mackay/Capricorn Section Zoning Plan. Townsville, GBRMPA, December 1987. 52p. ISBN 0 642 12008 0

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Central Section Zoning Plan. Townsville, GBRMPA, 1987. 42p. ISBN 0 642 52553 6

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- 3 Offshore Port Douglas
- 4 Offshore Cairns
- 5 Offshore Innisfail

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Mackay/Capricorn Section and Queensland Mackay/Capricorn Marine Park: Guide for Users 1: 250 000 (A1 size, coloured) July 1988 -

Whitsunday Group (BRA Q115a)

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Central Section Zoning Information: Guide for Users 1: 250 000 (A1 size, coloured) [1987]

Dunk Island (BRA Q109)
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Thursday Island (BRA Q100)
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MISCELLANEOUS MAPS (Currently available)

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Cairns Section, Great Barrier Reef Marine Park Zoning Plans - Zoning Maps (2) to (6) 1: 300 000 (A3 size, coloured) May 1983 (BRA Q51) to (BRA Q55)

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Reef Walking at North West Island Reef. 1985
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Coral Trout of the Great Barrier Reef. 1985
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Encounters with the Reef. Video, 30 minutes. Townsville, GBRMPA, 1987.

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FREEDOM OF INFORMATION

Documents available for purchase through AGPS bookshops:

Current Annual Report

Nomination of the Great Barrier Reef by the Commonwealth of Australia for inclusion in the World Heritage List. GBRMPA, 1981.

Bibliography of the Great Barrier Reef Province. Edgar Frankel, 1978 .

Great Barrier Reef Marine Park Act 1975 and Regulations.

Documents available free of charge for single copies from the Authority's Townsville office:

Zoning Plans

Research Report 1976-82

Information brochures, bulletins and leaflets

Selected maps of the Great Barrier Reef Marine Park

REEF database publications

Reef Notes series

Reflections magazine

Media releases and communiqués

Documents available for bulk-purchase from the Authority's Townsville office:

Posters

Various information brochures, books and audiovisual productions

Research Reports and Workshop Proceedings

Maps of Great Barrier Reef Marine Park

Small quantities may be purchased through the Great Barrier Reef Aquarium Shop.

Facilities for access:

The Townsville office holds most of the documents relating to the Authority, its Office and the Great Barrier Reef Consultative Committee. It is possible to arrange access to documents, available under provisions of the *Freedom of Information Act*, through either the Canberra or Townsville office (see addresses below), or at the State FOI Information Access Office. Staff are available to provide assistance in relation to any aspect of FOI requests.

Members of the public may make inquiries on FOI matters and inspect documents to which access has been granted at either office. Business hours, Monday to Friday, are 8.30am - 4.50pm. Formal requests for access to documents must be directed to the office listed in the following section.

Information about facilities for access by disabled persons can be obtained by contacting the FOI Officer at the Townsville office.

The following facilities for access are maintained at the Townsville office:.

- computer printer
- microfiche reader
- film and slide projectors
- video and audio tape recorders
- photocopy machine
- reading room.

FOI Procedures and Initial Contact Points:

Inquiries may be made in writing, by telephone or in person at the official FOI access points listed below. It is also suggested that inquirers give a telephone number.

Great Barrier Reef Marine Park Authority
Wonderland
2-68 Flinders St
TOWNSVILLE QLD 4810

PO Box 1379
TOWNSVILLE
QLD 4810

Telephone (077) 818811; Telex GBRMPA 47332; Fax (077) 72 6093

OR

Great Barrier Reef Marine Park Authority
2nd Floor, Gas Industry House
Cnr Moore & Rudd Streets
CANBERRA CITY ACT 2600

GPO Box 791
CANBERRA
ACT 2601

Telephone (06) 2470211; Telex ARRIC 62552; Fax (06) 247 5761

If any difficulty arises in the identification of a document or in providing access in the form requested, an officer of the Authority will contact the applicant with a view to resolving the difficulty.

In consultation with applications, documents will be made available as follows:

- by mail to the address specified by the applicant
- at the official FOI access point

The authorised decision-makers under the Act for the Authority and the Consultative Committee, with official addresses for the lodging of requests, are:

The Executive Officer
Great Barrier Reef Marine Park Authority
PO Box 1379
TOWNSVILLE QLD 4810

The Secretary
Great Barrier Reef Consultative Committee
PO Box 1379
TOWNSVILLE QLD 4810

STAFF PAPERS

PUBLISHED/PRESENTED IN 1990

BALDWIN, J and PERRIN, R **Great Barrier Reef Marine Park planning techniques: North West Island and Reef case study.** Paper presented to the Coastal Zone Management Workshop, Capricorn Iwasaki Resort, September 1990. [91/017]

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KELLEHER, Graeme and KENCHINGTON, Richard **Political and social dynamics for establishing marine protected areas.** *Nature & Resources*, Vol.26 No.2, 1990, pp.31-38. [90/016]

KENCHINGTON, Richard **Tourism in coastal and marine environments: a recreational perspective.** *Proceedings of the 1990 Congress on Coastal and Marine Tourism: a Symposium and Workshop on Balancing Conservation and Economic Development, Honolulu, Hawaii, 25-31 May 1990.* Vol. 1, pp.23-30. [90/012]

KINSEY, D W **Water quality and its effects on reef ecology.** Paper presented to Engineering in Coral Reef Regions Conference, Magnetic Island, 4-7 November 1990. [90/024]

LAWRENCE, David **The subsistence economy of the Kiwai-speaking people of the Southwest Coast of Papua New Guinea.** Paper presented to the Sustainable Development for Traditional Inhabitants of the Torres Strait Region Conference, Cairns, 19-23 November 1990. [90/026]

LAWRENCE, David **'Canoe Traffic' of the Torres Strait and Fly estuary.** In *Culture and History in the Pacific*, ed. Jukka Siikala. The Finnish Anthropological Society, Helsinki, 1990, pp.184-201. [90/033]

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WOODLEY, Simon **Law and approvals concerning water quality in the Great Barrier Reef Marine Park.** Paper presented to Engineering in Coral Reef Regions Conference, Magnetic Island, 4-7 November 1990. [90/034]

ZANN, Leon, BRODIE, Jon and VUKI, Veikila **History and dynamics of the crown-of-thorns starfish *Acanthaster planci* (L.) in the Suva Area, Fiji.** *Coral Reefs*, No.9, 1990, pp.135-144. [91/022]

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ALCOCK, Don, EAGER, Elaine, WILLIAMS, Allan and KENCHINGTON, Richard **Could tourism damage the Great Barrier Reef?** *Issues* No. 14, February 1991, pp.3-14. [91/023]

ALCOCK, Don **Education and Extension: Management's Best Strategy.** *Australian Parks & Recreation*, Vol.27 No.1, 1991, pp.15-17. [91/037]

BRODIE, Jon **Water quality in the Great Barrier Reef.** *Issues* No.14, February 1991, pp.15-25. [91/024]

BRODIE, Jon **Current and projected research - Great Barrier Reef Marine Park Authority.** In *Land use patterns and nutrient loading of the Great Barrier Reef Region: proceedings of the workshop held at the James Cook University of North Queensland, 17-18 November 1990*, ed. David Yellowlees. James Cook University, Townsville, 1991, pp.210-211. [91/013]

BRODIE, Jon **Urban impact on the Great Barrier Reef.** In *Land use patterns and nutrient loading of the Great Barrier Reef Region: proceedings of the workshop held at the James Cook University of North Queensland, 17-18 November 1990*, ed. David Yellowlees. James Cook University, Townsville, 1991, pp.18-26. [91/015]

BRODIE, Gilianne and BRODIE, Jon **A checklist of the opisthobranch molluscs of Fiji.** *Journal of Malacological Society of Australia*, No.11, 1990, pp.53-63. [91/008]

BUGLER, M and ANDREWS, G **Major project management in the Great Barrier Reef Marine Park.** Paper presented to Marine Parks Management Conference, Cairns, 30-31 May 1991. [91/039]

CRAIK, Wendy **Seabird cleaning and rehabilitation in the Great Barrier Reef Marine Park.** Paper presented to Seabird Cleaning Workshop, Townsville, 26 February, 1991. [91/001]

CRAIK, Wendy **Oil spills in the Great Barrier Reef Region.** *Proceedings of the International Oil Spill Conference, San Diego, California, March 1991*, American Petroleum Institute, Washington DC, 1991, pp.55-60. [91/033]

GLADSTONE, William **The crown-of-thorns starfish - is this still an issue?** *Issues* No.14, February 1991, pp.37-39. [91/027]

HARRIOTT, Vicki J **Macro-reef system?** *Freshwater and Marine Aquarium*, Vol.14 No.5, 1991, pp.8-10. [91/012]

KELLEHER, Graeme and CRAIK, Wendy **How much is the Great Barrier Reef worth?** Paper presented to the World Congress: Leisure & Tourism. Social and Environmental Change, Sydney, 16-19 July 1991. [91/038]

KELLEHER, Graeme and KENCHINGTON, Richard **Guidelines for establishing Marine Protected Areas.** Paper presented to the IUCN General Assembly Workshop, Perth, November 1990. [91/002]

KENCHINGTON, Richard **Tourism development in the Great Barrier Reef Marine Park.** *Ocean & Shoreline Management*, No.15, 1991, pp.57-78. [91/006]

KINSEY, D W **The Greenhouse Effect and coral reefs.** Paper presented at Global Environmental change - Pacific Aspects, Pacific Science Congress Plenary, Honolulu, May 1991. [91/018 Abstract]

KINSEY, Donald W **Systems level management, monitoring and research: the Australian perspective on environmental change.** Plenary address presented at Workshop on Coral Bleaching, Coral Reef Ecosystems & Global Climate Change, Miami, June 1991. [91/021]

KINSEY, Donald W **Can we resolve the nutrient issue for the reef?** *Search*, Vol.22 No.4, 1991, pp.119-121. [91/034]

KINSEY, D W **Water quality and its effects on reef ecology.** In *Land use patterns and nutrient loading of the Great Barrier Reef Region: proceedings of the workshop held at the James Cook University of North Queensland, 17-18 November 1990*, ed. David Yellowlees. James Cook University, Townsville, 1991, pp.192-196. [91/016]

KINSEY, D and FURNAS, M **Behaviour and effects of nutrients/sediments on marine biota and ecosystems.** In *Land use patterns and nutrient loading of the Great Barrier Reef Region: proceedings of the workshop held at the James Cook University of North Queensland, 17-18 November 1990*, ed. David Yellowlees. James Cook University, Townsville, 1991, pp.233-234. [91/014]

KINSEY, D W and HOPLEY, D **The significance of coral reefs as global carbon sinks — response to Greenhouse.** *Palaeogeography, Palaeoclimatology Palaeoecology (Global and Planetary Change Section)*, No.89, 1991, pp.363-377. [91/003]

KINSEY, Don and MURDOCH, Lesley **Will the Great Barrier Reef survive the Greenhouse effect?** *Issues* No.14, February 1991, pp.40-42. [91/028]

LAWRENCE, David **Traditional use of marine environment: an examination of the Aboriginal and Torres Strait Islander use of marine resources in northern Queensland.** Paper presented at the Marine Parks Management Conference, Cairns, 30-31 May 1991. [91/011]

LAWRENCE, D and DIGHT, I J **The Torres Strait baseline study: environmental protection of a tropical marine environment in Northern Australia.** In *Coastal Zone '91: proceedings of the Seventh Symposium on Coastal and Ocean Management, Long Beach, California, 8-12 July 1991*, ed. Orville T Magoon et al. American Society of Civil Engineers, New York, 1991, pp.1125-1139. [91/004]

MURDOCH, Lesley Howard **Why do corals spawn simultaneously?** *Issues* No.14, February 1991, pp.47-50. [91/030]

OTTESEN, Peter and WOODLEY, Simon **Great Barrier Reef Marine Park - research for better management.** Paper presented to International Conference on Science and the Management of Protected Areas, Nova Scotia, Canada, 14-19 May, 1991. [91/010]

RAAYMAKERS, Steve **Could an oil spill destroy the Reef?** *Issues* No.14, February 1991, pp.24-31. [91/025]

RAAYMAKERS, Steve **Oil spills and the Great Barrier Reef Marine Park.** Paper presented to Marine Parks Management Conference, Cairns, 30-31 May 1991. [91/009]

ROSSER, Stephanie and OSMOND, Mike **Can the Reef stay a haven for whales?** *Issues* No.14, February 1991, pp.43-46. [91/029]

SAUNDERS, Loretta **Should we have a coral reef on land?** *Issues* No.14, February 1991, pp.55-60. [91/031]

SCHERL, Lea and CASSELLS, David **Social sciences in resource management: impressions on the role of market research in park management and planning.**(Letter to the Editor) *Australian Parks and Recreation*, Vol 27, No.1, 1991 pp.5-6. [91/005]

SHORTHOUSE, Brett and SIMMONS, Mark **Will we fish in the future?** *Issues* No.14, February 1991, pp.32-36. [91/026]

RESEARCH IN PROGRESS 1990-91

Detailed descriptions of projects are available on the database **Australian Marine Research in Progress (MRIP)** on CSIRO AUSTRALIS. A special printed edition for the Great Barrier Reef Region is also published by the Authority.

* Project completed during 1990-91 (\$) Refers to 1990-91 funding only

REEF MONITORING

133, 293* Monitoring Replenishment Areas Stages 1 and 2
PROJECT LEADER: Mr K Beinssen (QDEH) (\$nil)

153 Stratigraphy of lagoon sediments and reef margins - Lady Musgrave Island
PROJECT LEADER: Assoc Prof CVG Phipps (Geology and Geophysics, University of Sydney) (\$nil)

233 Monitoring of Cape Tribulation fringing reefs (communities)
PROJECT LEADER: Dr AM Ayling (Sea Research) (\$nil)

238 Monitoring coral spawning using remote sensing (Pilot Study)
PROJECT LEADERS: Dr JT Baker, Dr J Oliver, (Biological Sciences, James Cook University), Dr D Kuchler (Mapping and Monitoring Technology Pty Ltd) (\$nil)

290* Seagrass habitat survey - southern sections of the Marine Park
PROJECT LEADER: Dr R Coles (Qld Department of Primary Industries) (\$2953)

291 Coral spawning experiment (CORSPEX '86)
PROJECT LEADER: Dr B Willis et al. (Biological Sciences, James Cook University) (\$nil)

331* Green Island Information Review
PROJECT LEADER: Mr I Baxter (Consultant) (\$2400)

373* History of dredging in Cleveland Bay and its effects on sediment movement and growth of corals, mangroves and seagrass
PROJECT LEADER: Dr A Pringle (University of Lancaster) (\$500)

383 An investigation of optimum methods and unit sizes for the visual estimation of abundances of some coral reef organisms
PROJECT LEADERS: Dr B Mapstone (James Cook University), Dr AM Ayling (Sea Research) (\$6260)

393 Monitoring of Heron Island Reef
PROJECT LEADERS: Dr I Lawn (Heron Island Research Station) (\$nil - 50% developer funded)

394 A case history of a tourist pontoon on an outer barrier reef and on-going monitoring projects relating to marine biota
PROJECT LEADER: Ms W Richards (Reef Biosearch Pty Ltd) (\$nil)

399 Heron Island - monitoring program (coral community)
PROJECT LEADER: Mr D Fisk (Reef Research and Information Services) (\$13,395 - 50% developer funded)

416 Digitising of manta tow maps
PROJECT LEADER: Dr J Oliver (Consultant) (\$nil)

438* Impact assessment at Green Island
PROJECT LEADER: Mr D Fisk (Reef Research and Information Services) (\$7200)

440, 513 Development of turbidity monitoring system
PROJECT LEADER: Mr J Gillies (GBRMPA) (\$3345)

442 Assessment of the effects of the removal of a pontoon system supporting a large-scale tourist operation on the Barrier Reef
PROJECT LEADER: Ms AE Gibson (Reef Biosearch Pty Ltd) (\$5000)

443* Impact of harbour dredging on the Heron Island volute (*Cymbiolacca pulchra*)
PROJECT LEADER: Dr C Catterall (Griffith University) (\$1872)

445 Low Isles: a collection of historical photographs and images
PROJECT LEADER: Dr D Kuchler (Mapping and Monitoring Technology Pty Ltd) (\$1940)

460 The potential impact of development on inshore seagrass beds in the Great Barrier Reef Marine Park
PROJECT LEADER: Dr H Marsh (James Cook University) (\$nil)

479 An investigation of scales and magnitudes of variability in population densities of some coral reef organisms: Stage II in the development of long term monitoring procedures

PROJECT LEADERS: Dr B Mapstone, Prof JH Choat (James Cook University), Dr AM Ayling (Sea Research) (\$nil)

511 A visual survey of demersal biota in the Cairns Section of the Great Barrier Reef Marine Park

PROJECT LEADERS: Dr B Mapstone, Prof JH Choat (James Cook University), Dr AM Ayling (Sea Research) (\$100,000)

512 Coral recovery at Green Is. 1984-1991: A synthesis

PROJECT LEADER: Mr D Fisk (Reef Research and Information Services) (\$3000)

514 Broadscale survey of the impact of Cyclone Ivor on coral reefs

PROJECT LEADER: Dr T Done (Australian Institute of Marine Science) (\$18,200)

515* Green Island Management and Research Workshop

PROJECT LEADERS: Dr B Lassig, Mr J Brodie (GBRMPA) (\$1975)

524 Major structuring determinants of coral reef assemblages - Whitsundays, Keppels etc.

PROJECT LEADER: Mr R van Woelik (Reefsearch) (\$7750)

525 Monitoring temporal changes in the distribution and abundance of dugongs, sea turtles and cetaceans in the northern Great Barrier Reef Marine Park between Cape Bedford and Hunter Point

PROJECT LEADER: Dr H Marsh (James Cook University) (\$40,987)

526 Effects of Cyclone Joy - Keppel Island survey following Fitzroy floods

PROJECT LEADER: Mr R van Woelik (Reefsearch) (\$4800)

Hamilton Island survey (of coral mortality) - May 1991

PROJECT LEADER: Mr R van Woelik (Reefsearch) (\$nil)

OCEANOGRAPHY

425 Provision of advice on oceanographic and engineering matters

PROJECT LEADER: Marine Modelling Unit (James Cook University) (\$47,500)

426* Small-scale and inter-reef dispersal of larvae, pollutants and nutrients on the Great Barrier Reef

PROJECT LEADER: Dr K Black (Victorian Institute of Marine Sciences) (\$3000)

530 Modelling approach to larval dispersal and reef fish recruitment

PROJECT LEADER: Mr P Bikaunieks (\$8000)

EFFECTS OF FISHING

200 Demersal reef fish study

PROJECT LEADERS: Mr R Pearson, Dr G Goeden (Fisheries Research, Qld Department of Primary Industries), Mr G McPherson (Qld Department of Primary Industries) (\$nil)

292 Reef survey of coral trout - report production

PROJECT LEADER: Dr AM Ayling (Sea Research) (\$nil)

295* Trawling impact - red spot king prawn

PROJECT LEADER: Mr M Dredge (Qld Department of Primary Industries) (\$5600)

358 The seasnake by-catch of the east coast prawn fishery. Development of a reliable age determination technique

PROJECT LEADER: Mr T Ward (Zoology, James Cook University)
SUPERVISOR: Dr H Marsh (\$1552)

381 Review of published and unpublished information on reef fishes of commercial and recreational fishing interest in the Great Barrier Reef Region

PROJECT LEADERS: Prof JH Choat, Dr G Russ (James Cook University), Dr D Williams (Australian Institute of Marine Science) (\$nil)

396* Collection and analysis of amateur fishing data

PROJECT LEADER: Ms M Zann Schuster (Consultant) (\$3925)

444 Catch / effort study of GBR recreational fisheries - boat ramp survey

PROJECT LEADER: Dr T Hundloe (Griffith University) (\$nil)

527* Input of recreational demersal fisheries logbook data for the Great Barrier Reef

PROJECT LEADER: Mr J Higgs (Consultant) (\$12,055)

528 Design of experimental management program to determine effects of fishing on the Great Barrier Reef

PROJECT LEADERS: Dr K Sainsbury (CSIRO), Prof C Walters (Uni of British Columbia) (\$9093)

529* Spear fishing workshop

PROJECT LEADER: Dr W Craik (GBRMPA) (\$695)

WATER QUALITY**124 The effects of fuel oil, oil emulsifier and lowered salinity upon the common Indo-Pacific reef coral *Acropora formosa***

PROJECT LEADER: Dr P Harrison (Biological Sciences, James Cook University through Sir George Fisher Centre) (\$nil)

342 Water quality and the effect of seasonal change - Trinity Inlet to Green Island

PROJECT LEADERS: Dr F Thomas, Assoc Prof D Yellowlees, Mr B Brady (Chemistry, James Cook University) (\$nil)

344 The importance of siltation and reefal sedimentation resuspension on reefal development in the Whitsunday Islands area

PROJECT LEADERS: Dr D Johnson, Mr S Blake (Geology, James Cook University) (\$nil)

415 Draft production of oil slick identity pamphlet

PROJECT LEADER: Mr B Kettle (Marine Bio Logic) (\$270)

422 Nitrogen and phosphorus budgets for Great Barrier Reef shelf waters - Palm Passage to Low Isles

PROJECT LEADER: Dr M Furnas (Australian Institute of Marine Science) (\$36,000)

423* A pilot study of baseline levels of nutrients around Green Island

PROJECT LEADERS: Mr J Brodie, Mr A Steven (James Cook University) (\$3780)

437* Pilot survey for Reef Monitoring Trust - north Queensland waters

PROJECT LEADERS: Dr D Kinsey, Ms C Baldwin (GBRMPA), Mr D Fisk (Reef Research and Information Services) (\$nil)

462* A reconnaissance survey of water quality parameters, dissolved and particulate nutrients in waters of the northern Great Barrier Reef

PROJECT LEADER: Dr M Furnas (Australian Institute of Marine Science) (\$10,000)

532 Evaluation of the fate and effects of sewage discharge at Green Island

PROJECT LEADERS: Mr A Steven, Mr R van Woesik (Sir George Fisher Centre, James Cook University) (\$25,000)

533 Reef Fertilization Experiment Design

PROJECT LEADERS: Mr J Brodie, Mr A Steven (\$2500)

HUMAN USE / SOCIAL IMPACT**379* Strategy for social impact and amenity research and monitoring**

PROJECT LEADER: Dr L Scherl (James Cook University) (\$2850)

434 Economic valuation of non-market goods: the contingent valuation method

PROJECT LEADER: Mr R Blamey (Griffith University) (\$nil)

457 Survey of the educational effectiveness of the Great Barrier Reef Aquarium

PROJECT LEADER: Ms G Moscardo (James Cook University) (\$nil)

521 Social Sciences in Resource Management Program

PROJECT LEADER: Dr R Schreyer (USA) (\$5690)

522 Great Barrier Reef Recreation Experience Study (Lady Musgrave)

PROJECT LEADERS: Dr L Scherl, Mr P Valentine, Mr M Millard (\$29,684)

523 Traditional marine conservation practices for Far Northern Section Communities

PROJECT LEADER: Dr D Smyth (Consultant) (\$12,500)

MANAGEMENT STUDIES**OIL SPILLS****436 Effects of oil and dispersants on Great Barrier Reef corals**

PROJECT LEADER: Mr P Hough (Great Barrier Reef Aquarium) (\$10,000)

518* Seabird Cleaning and Bioremediation Workshops

PROJECT LEADER: Mr S Raaymakers (GBRMPA) (\$2387)

SEA DUMPING**446 A baseline survey of Middle Reef**

PROJECT LEADER: Mr B Kettle (Marine Bio Logic) (\$nil)

Monitoring of the benthic communities of Middle Reef, Townsville

PROJECT LEADER: Mr L DeVantier (Consultant) (\$nil)

Mariculture**510 Review and outline of fish cage culture in the Great Barrier Reef Region**

PROJECT LEADER: Dr J Trendall (Australian Independent Research) (\$1000)

Other**117 Australian Marine Research in Progress (MRIP)**

PROJECT LEADERS: Australian Institute of Marine Science, Great Barrier Reef Marine Park Authority, Victorian Institute of Marine Sciences, Information Services Unit (CSIRO) (\$17,600)

152 Coastal processes forming and maintaining the coral cays of the Great Barrier Reef and their implications for Marine Park management

PROJECT LEADER: Dr M Gourlay (Civil Engineering, University of Queensland) (\$nil)

229 Information retrieval from remote weather stations on the Great Barrier Reef

PROJECT LEADER: Australian Institute of Marine Science (\$2520)

385 CORSPEX Analysis of plankton samples

PROJECT LEADERS: Dr B Willis, Dr J Oliver (James Cook University) (\$nil)

468 Field survey for carbonate and silica sediment deposits

PROJECT LEADER: Dr M Mabin (James Cook University) (\$nil)

499* Staff / researcher liaison day May '91

PROJECT LEADER: In house (\$2015)

508 Preparation of workshops and other publications

PROJECT LEADER: Ms C Baldwin (Consultant) (\$5000)

DEVELOPER FUNDED MONITORING

391* Monitoring impact of dredge spoil dumping - Cairns Port Authority

PROJECT LEADER: Connell Wagner (Consultants) (developer funded)

392 Heron Island spoil dump - short term monitoring and environmental effects

PROJECT LEADERS: Dr J Jell, Dr M Gourlay (University of Queensland) (\$nil)

401 Baseline study and post-development survey for Daydream Island (Marina Development)

PROJECT LEADER: Mr D Fisk (Reef Research and Information Services) (100% developer funded)

403, 531 Monitoring impact of dredge spoil dumping - Cleveland Bay

PROJECT LEADER: Mr B Service (Townsville Port Authority), Dr E Wolanski (Australian Institute of Marine Science), Dr M Heron, Dr G Jones (James Cook University) (100% developer funded)

404 Monitoring John Brewer Reef floating hotel (biological)

PROJECT LEADER: Dr P Saenger (Northern Rivers College of Advanced Education), Prof JH Choat (James Cook University) (100% developer funded)

405 Monitoring John Brewer Reef floating hotel - Reef Use Survey

PROJECT LEADERS: Dr P Saenger, Mr I Dutton (Northern Rivers College of Advanced Education), Mr P Valentine (James Cook University), Ms K Watson (Consultant) (100% developer funded)

406 Baseline study for Environmental Monitoring Program: Magnetic Quay Development - benthic communities, water quality turbidity / sediments

PROJECT LEADER: Marine Biology Department (James Cook University) (100% developer funded)

407 Biological calibration and construction-study for Environmental Monitoring Program: Magnetic Quay Development

PROJECT LEADER: James Cook University (100% developer funded)

408 Baseline environmental study and EMP: day trip pontoon Wistari Reef

PROJECT LEADER: Mr J Thorogood (Fisheries Research Consultants) (100% developer funded)

447 Ongoing biological monitoring John Brewer Reef: post hotel removal

PROJECT LEADER: Prof JH Choat (James Cook University) (\$nil)

498 Wistari Reef Walkway Environmental Monitoring Program

PROJECT LEADER: Mr J Thorogood (Fisheries Research Consultants) (100% developer funded)

500 Moore Reef Tourist Development

PROJECT LEADER: Mr B Kettle (Marine Bio Logic) (100% developer funded)

502 Mariculture EMP Reefarm P/L Arlington Reef

PROJECT LEADER: Reefarm Pty Ltd (developer funded)

504 Water quality and sediment condition John Brewer Reef: post hotel removal

PROJECT LEADER: Dr G Jones (James Cook University) (\$nil)

507 Kelso Reef Pontoon Environmental Monitoring Program - baseline study

PROJECT LEADER: Mr B Kettle (Marine Bio Logic) (100% developer funded)

CROWN-OF-THORNS STARFISH

This is the program of research funded following recommendations by the Crown-of-Thorns Starfish Research Committee (COTSREC)

272 Status of *Acanthaster planci* in the South Pacific and selected groups in the Indo-Pacific

PROJECT LEADER: Dr L Zann (GBRMPA) (\$4500)

273 Economic and socio-economic impacts of the crown-of-thorns starfish on the Great Barrier Reef

PROJECT LEADER: Dr T Hundloe (Australian Environmental Studies, Griffith University) (\$nil)

- 274 Biological and economic risk analysis study to contribute to assessment of the need for control of crown-of-thorns starfish**
PROJECT LEADER: Dr T Hundloe (Australian Environmental Studies, Griffith University) (\$nil)
- 276* Studies on the diseases of the crown-of-thorn starfish *Acanthaster planci***
PROJECT LEADERS: Prof RSF Campbell, Dr J Glazebrook (Tropical Veterinary Science, James Cook University) (\$3721)
- 280 Population dynamics of crown-of-thorns starfish on Suva Barrier Reef**
PROJECT LEADER: Dr L Zann (GBRMPA) (\$4500)
- 321* Chemical pathways**
PROJECT LEADER: Dr RB Johns (Organic Chemistry, University of Melbourne) (\$nil)
- 322 Mainland run-off hypothesis (land use)**
PROJECT LEADERS: Assoc Prof D Hopley, Mr P Valentine, Ms C Rasmussen (Sir George Fisher Centre for Tropical Marine Studies, James Cook University) (\$nil)
- 324 Crown-of-thorns starfish sighting survey**
PROJECT LEADER: Dr B Lassig (GBRMPA) (\$nil)
- 325 COT Video**
PROJECT LEADER: Dr B Lassig (GBRMPA) (\$nil)
- 326 COT Booklet**
PROJECT LEADER: Mr U Engelhardt (GBRMPA) (\$nil)
- 327 Use of infra red photography for monitoring effects of *Acanthaster planci* outbreaks**
PROJECT LEADER: Assoc Prof D Hopley (Sir George Fisher Centre for Tropical Marine Studies, James Cook University) (\$nil)
- 330 Abundance and distribution patterns of *Acanthaster planci* on the Great Barrier Reef**
PROJECT LEADER: Dr AM Ayling (Sea Research) (\$nil)
- 331* Information base and pilot study for an interdisciplinary study of Green Island**
PROJECT LEADER: Prof JH Choat, Mr I Baxter (Marine Biology, James Cook University) (\$400)
- 364 An interdisciplinary research and monitoring program to determine the consequences and possible causes of *Acanthaster planci* infestations at Green Island**
PROJECT LEADERS: Prof JH Choat, Assoc Prof D Hopley (Marine Biology and Sir George Fisher Centre for Tropical Marine Studies, James Cook University) (\$nil)
- 367* Distribution of crown-of-thorns starfish skeletal elements in surface sediment, Central and Southern Sectors of the Great Barrier Reef**
PROJECT LEADERS: Prof RA Henderson (Geology, James Cook University), Dr P Moran (Australian Institute of Marine Science) (\$3855)
- 427 Search for evidence within subsurface sediments of the occurrence of previous aggregations of crown-of-thorns starfish on reefs of the Howick Group, northern Great Barrier Reef**
PROJECT LEADERS: Dr P Flood (University of New England), Dr E Frankel (University of Technology, Sydney) (\$nil)
- 429 Develop interactive crown-of-thorns display based on Apple Macintosh computer**
PROJECT LEADER: Mr B Kettle (Marine Bio Logic) (\$4000)
- 430 An integrated study of hard coral regeneration and juvenile crown-of-thorns starfish at Green Island**
PROJECT LEADER: Mr D Fisk (Reef Research and Information Services) (\$30,430)
- 431 The impact of the crown-of-thorns starfish *Acanthaster planci* on the community structure, demography and morphology of massive corals**
PROJECT LEADER: Mr L DeVantier (Australian Institute of Marine Science) (\$5000)
- 469* Survey of marine scientists and other experts for anecdotal observations of crown-of-thorns starfish predation**
PROJECT LEADER: Mr B Kettle (Marine Bio Logic) (\$800)
- 470 Development of a robust method for determining the status of individual reefs with respect to outbreaks of crown-of-thorn starfish**
PROJECT LEADERS: Assoc Prof HD Marsh, Ms L Fernandes (James Cook University), Dr P Moran (Australian Institute of Marine Science) (\$28,329)
- 471 Modelling approach to hydrodynamics and the large-scale larval dispersal of *Acanthaster planci***
PROJECT LEADERS: Dr L Bode, Mr I Dight, Dr MK James (James Cook University) (\$28,000)
- 472 Modelling to assess the impact of predators on crown-of-thorns starfish populations**
PROJECT LEADERS: Dr H McCallum, (University of Queensland), Dr R Bradbury (Australian Institute of Marine Science) (\$6000)
- 475 The biology and ecology of the giant triton shell, *Charonia tritonis*, with particular reference to its role as a predator of the crown-of-thorns starfish**
PROJECT LEADERS: Dr W Gladstone, Dr L Zann (GBRMPA) (\$252)

476 Age determination in *Acanthaster planci*
PROJECT LEADERS: Prof J Lucas, Mr R Stump
(James Cook University) (\$39,000)

477 Feeding studies on potential fish predators of post-settlement *Acanthaster planci*: A post-doctoral fellowship
PROJECT LEADERS: Prof JH Choat,
Dr H Sweatman (James Cook University)
(\$100,000)

478 COTSREC
COTSREC Committee (\$5000)

534 *Acanthaster* feeding on coral reefs: the implications for bioerosion
PROJECT LEADER: Ms B Musso (James Cook University) SUPERVISORS: Prof JH Choat (James Cook University), Dr CR Wilkinson (Australian Institute of Marine Science) (\$13,000)

535 The physical oceanography of the Great Barrier Reef during and prior to crown-of-thorns starfish outbreaks
PROJECT LEADER: Dr K Black (Victorian Institute of Marine Sciences) (\$9500)

TORRES STRAIT BASELINE STUDY

A four - year environmental study in the Torres Strait marine environment, funded by the Commonwealth Government. The study will determine the background levels of environmental parameters particularly heavy metals, in selected marine species and in sediments in the Torres Strait marine environment. It will assist in determining whether there is evidence of contamination from mining operations in the Fly River catchment area.

481 Torres Strait baseline scientific program coordination.
PROJECT LEADERS: Dr D Lawrence (GBRMPA)
Mr I Dight (James Cook University)

AUGMENTATIVE RESEARCH GRANTS SCHEME 1991

The Great Barrier Reef Marine Park Authority awarded 15 grants this year for students of subjects related to management of the Marine Park.

Sediment trap design in fringing coral reef research
PROJECT LEADER: Ms J Albert
SUPERVISOR: Assoc Prof D Hopley (James Cook University) (\$1000)

A suggested sampling design and distribution for members of the Amphiprioninae (Anemone fish) on the Great Barrier Reef
PROJECT LEADER: Mr I Butler
SUPERVISOR: Dr G Russ (James Cook University) (\$700)

The biology of sediment incorporation into coral skeletons
PROJECT LEADER: Mr P Davies
SUPERVISOR: Dr J Collins (James Cook University) (\$1000)

Age and growth of the coral trout *Plectropomus spp* - the juvenile phase
PROJECT LEADER: Ms B Ferreira
SUPERVISORS: Dr G Russ, Prof JH Choat (James Cook University) (\$1706)

Analysis of the catch statistics of the recreational demersal line fisheries on the Great Barrier Reef
PROJECT LEADER: Mr J Higgs
SUPERVISOR: Dr G Russ (James Cook University) (\$850)

The demography of reef crest corals
PROJECT LEADER: Ms V Nelson
SUPERVISORS: Prof JH Choat, Dr T Hughes (James Cook University) (\$1000)

The interaction of estuaries and nearshore habitats: Life cycles of recreational and economically important fishes
PROJECT LEADER: Mr M Sheaves
SUPERVISORS: Dr G Russ, Dr D McB Williams (James Cook University) (\$900)

Feeding ecology of coral trout *Plectropomus leopardus*, *P. maculatus* and *P. laevis*
PROJECT LEADER: Ms J St.John
SUPERVISORS: Dr G Russ, Dr B Mapstone (James Cook University) (\$1500)

An investigation into the use of coral as a nutrient level indicator
PROJECT LEADER: Mr J Taylor
SUPERVISORS: Dr C Cuff, Assoc Prof D Hopley (James Cook University) (\$700)

Feeding ecology of corallivorous gastropods of the genus *Drupella*
PROJECT LEADER: Mr A Thompson
SUPERVISORS: Dr J Collins, Dr R Babcock (James Cook University) (\$1000)

The ecology of *Caulerpa cupressoides* on Heron Reef
PROJECT LEADER: Ms G Cook
SUPERVISOR: Dr RW Rogers (University of Queensland) (\$750)

Phytoplankton dynamics in the Low Isles region
PROJECT LEADER: Mr I Elmetri
SUPERVISOR: Dr P Bell (University of Queensland) (\$900)

Axenic laboratory culture of the cyanobacterium *Trichodesmium*
 PROJECT LEADER: Ms C Perry
 SUPERVISOR: Dr D Mitchell (University of Queensland) (\$920)

The sedimentation, hydrology and biogeochemistry of the Moresby River Estuary System
 PROJECT LEADER: Mr B Eyre
 SUPERVISOR: Dr A Arakel (Queensland University of Technology) (\$1000)

The uptake and distribution of metals in tropical marine species and the use of metal binding analysis for bioindicator assessment
 PROJECT LEADER: Mr A Flowers
 SUPERVISOR: Dr M Capra (Queensland University of Technology) (\$996)

APPENDIX G

ABBREVIATIONS

AAT	Administrative Appeals Tribunal	GBRCC	Great Barrier Reef Consultative Committee
ABC	Australian Broadcasting Corporation	GBRMPA	Great Barrier Reef Marine Park Authority
ACIAR	Australian Centre for International Agricultural Research	GIS	Geographic Information Systems
ADB	Asian Development Bank	GRID	Global Resource Database
AGPS	Australian Government Publishing Service	IDP	International Development Program
AIMS	Australian Institute of Marine Science	IUCN	International Union for the Conservation of Nature and Natural Resources
ALS	Australian Littoral Society	JCU	James Cook University
ANPWS	Australian National Parks and Wildlife Service	MESA	Marine Education Society of Australasia
ASL	Average Staffing Levels	OECD	Organisation for Economic Co-operation and Development
AUSLIG	Australian Surveying and Land Information Group	QBFP	Queensland Boating and Fisheries Patrol
CDPIE	Commonwealth Department of Primary Industries and Energy	QCFO	Queensland Commercial Fishermen's Organization
COTSARC	Crown-of-Thorns Starfish Advisory Review Committee	QDEH	Queensland Department of Environment and Heritage
COTSREC	Crown-of-Thorns Starfish Research Committee	QDPI	Queensland Department of Primary Industries
CNPPA	Commission on National Parks and Protected Areas	QFMA	Queensland Fish Management Authority
CSIRO	Commonwealth Scientific and Industrial Research Organisation	Q.NPWS	Queensland National Parks and Wildlife Service
DASETT	Department of the Arts, Sport, the Environment, Tourism and Territories	QSRFC	Queensland Sport and Recreational Fishing Council
DITAC	Department of Industry, Technology and Commerce	SACRS	South Australian Centre for Remote Sensing
EEO	Equal Employment Opportunity	UNEP	United Nations Environment Program
ERIN	Environmental Resources Information Network	UNESCO	United Nations Educational, Scientific and Cultural Organisation
FOI	Freedom of Information		
GBR	Great Barrier Reef		

MEMBERS OF ADVISORY COMMITTEES

Crown-of-thorns Starfish Research Committee (COTSREC)

Professor J M Swan (Chairman)

Dr J T Baker *Director, Australian Institute of Marine Science*

Dr P J Moran *Australian Institute of Marine Science*

Mr G Kelleher *Chairman, Great Barrier Reef Marine Park Authority*

Dr B R Lassig (Program Coordinator) *Great Barrier Reef Marine Park Authority*

Professor R M Golding *Vice-Chancellor, James Cook University of North Queensland*

Mr R Pearson *Executive Officer, Division of Fisheries and Wetlands Management, Queensland, Department of Primary Industries*

Dr K Sainsbury *Principal Research Scientist, Division of Fisheries Research, CSIRO*

Dr P J Davies *Bureau of Mineral Resources, Geology and Geophysics, Division of Marine Geosciences and Petroleum Geology*

Advisory Committee on Research into the Effects of Fishing in the Great Barrier Reef Region

Dr D W Kinsey (Chair) *Great Barrier Reef Marine Park Authority*

Dr B Pollock *Queensland Department of Primary Industries*

Mr R Pearson *Queensland Department of Primary Industries*

Mr L Gwynne *Queensland Fish Management Authority*

Mr T Loveday *Queensland Commercial Fishermen's Organisation*

Dr B Hill *CSIRO*

Mr D Perkins *Queensland National Parks and Wildlife Service*

Dr M Pichon *Australian Institute of Marine Science*

Mr D Griffith *Queensland Sport and Recreational Fishing Council*

Mr S Woodley (Secretariat) *Great Barrier Reef Marine Park Authority*

Dr B Mapstone (Secretariat) *Great Barrier Reef Marine Park Authority*

Water Quality Advisory Committee

Dr D W Kinsey (Chairman) *Great Barrier Reef Marine Park Authority*

Dr P Bell *Department of Chemical Engineering University of Queensland*

Mr J Brodie (Program Coordinator) *Great Barrier Reef Marine Park Authority*

Dr D W Connell *Government Chemical Laboratory (Queensland)*

Dr M Furnas *Australian Institute of Marine Science*

Dr G Jones *Department of Chemistry and Biochemistry James Cook University of North Queensland*

Dr J Hansen *Sydney Water Board*

Mr Andrew Moss *Division of Environment , Queensland Department of Environment and Heritage*

Ms C Baldwin *Environmental Management Consultant, Brisbane*

Dr W Craik *Great Barrier Reef Marine Park Authority*

Dr L Zann *Fishery Resource Advisor, FAO*

Great Barrier Reef Marine Park Management Coordinating Committee

Dr D W Kinsey (Chair) *Great Barrier Reef Marine Park Authority*

Mr P Neville *Department of Primary Industries*

Mr D Perkins *Queensland National Parks and Wildlife Service and Premier's Department*

FINANCIAL STATEMENTS

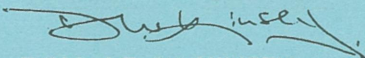
GREAT BARRIER REEF MARINE PARK AUTHORITY

Financial Statements for the Year Ended 30 June 1991

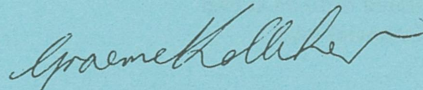
In our opinion, the accompanying Statement of Activity, Statement of Capital Accumulation, Statement of Financial Position and Statement of Sources and Applications of Funds, have been prepared in accordance with the ' Guidelines for Financial Statements of Commonwealth Entities ' approved by the Minister for Finance, applicable accounting concepts and standards and show fairly

- (a) the operating result of the Authority for the financial year ended 30 June 1991,
- (b) the state of affairs of the Authority as at 30 June 1991, and
- (c) the Authority's sources and applications of funds during the financial year ended 30 June 1991.

At the date of this certificate there are reasonable grounds to believe that the Authority will be able to pay its debts as and when they fall due.



DONALD W KINSEY
Executive Officer
17/10/91



GRAEME KELLEHER
Chairman
17/10/91

GREAT BARRIER REEF MARINE PARK AUTHORITY
STATEMENT OF ACTIVITY FOR YEAR ENDED 30 June 1991

	Notes	1990-91 \$	1989-90 \$
OPERATING REVENUE BEFORE ABNORMAL ITEMS			
Parliamentary appropriations	3(a)	10,164,000	9,266,000
Payments from Queensland for day-to-day management	2(a)(c)	2,586,000	2,191,140
Great Barrier Reef Aquarium	4(a)	1,611,228	1,536,850
Miscellaneous Revenue	3(b)	1,198,077	1,035,734
Total operating revenue before abnormal items		<u>15,559,305</u>	<u>14,029,724</u>
OPERATING EXPENSE BEFORE ABNORMAL ITEMS			
Research and Monitoring		2,449,254	1,902,359
Planning and Management		1,537,931	1,269,637
Education/Information		1,300,518	1,201,081
Great Barrier Reef Aquarium	4(c)	1,843,806	1,658,974
Environmental Impact Management		1,002,275	948,160
External Advisory Services		45,345	-
Corporate Management and Services	5	1,683,063	1,534,751
Payments to Queensland for day-to-day management	2	5,614,942	4,791,595
Total operating expense before abnormal items	6	<u>15,477,134</u>	<u>13,306,557</u>
Operating surplus before abnormal items		82,171	723,167
Abnormal items	7	267,338	-
Operating surplus or deficit before unfunded charges		(185,167)	723,167
Aggregate amount of unfunded charges	4(d), 8	833,912	830,896
Operating deficit		<u>(1,019,079)</u>	<u>(107,729)</u>
Retained surpluses or accumulated deficits at beginning of financial year		(923,773)	7,559,999
Aggregate of amounts transferred to reserves		-	8,376,043
Accumulated deficits at end of financial year		<u>(1,942,852)</u>	<u>(923,773)</u>

The accompanying notes form an integral part of these financial statements.

GREAT BARRIER REEF MARINE PARK AUTHORITY
STATEMENT OF CAPITAL ACCUMULATION FOR YEAR ENDED 30 June 1991

	1990-91	1989-90
	\$	\$
Balance at beginning of financial year	<u>1,103,988</u>	<u>1,103,988</u>
Balance at end of financial year	<u>1,103,988</u>	<u>1,103,988</u>

The accompanying notes form an integral part of these financial statements.

GREAT BARRIER REEF MARINE PARK AUTHORITY
STATEMENT OF FINANCIAL POSITION AS AT 30 June 1991

	Notes	1990-91	1989-90
		\$	\$
CURRENT ASSETS			
Cash	9	2,082,532	2,197,787
Receivables	10	140,601	316,497
Inventories		71,489	69,872
Other		<u>35,937</u>	<u>10,453</u>
Total current assets		<u>2,330,559</u>	<u>2,594,609</u>
NON-CURRENT ASSETS			
Property, plant and equipment	11	<u>8,366,103</u>	<u>9,002,777</u>
Total non-current assets		<u>8,366,103</u>	<u>9,002,777</u>
Total assets		<u>10,696,662</u>	<u>11,597,386</u>
CURRENT LIABILITIES			
Creditors		422,552	534,543
Provisions	12	542,991	470,591
Other	13,14	<u>122,500</u>	<u>193,981</u>
Total current liabilities		<u>1,088,043</u>	<u>1,199,115</u>
NON-CURRENT LIABILITIES			
Provisions	12	625,389	563,121
Other	13,14	<u>1,446,051</u>	<u>1,278,892</u>
Total non-current liabilities		<u>2,071,440</u>	<u>1,842,013</u>
Total liabilities		<u>3,159,483</u>	<u>3,041,128</u>
Net assets		<u>7,537,179</u>	<u>8,556,258</u>
EQUITY			
Capital		1,103,988	1,103,988
Reserves		8,376,043	8,376,043
Accumulated deficits		<u>(1,942,852)</u>	<u>(923,773)</u>
Total equity		<u>7,537,179</u>	<u>8,556,258</u>

The accompanying notes form an integral part of these financial statements.

GREAT BARRIER REEF MARINE PARK AUTHORITY
STATEMENT OF SOURCES AND APPLICATIONS OF FUNDS
FOR YEAR ENDED 30 June 1991

	Notes	1990-91 \$	1989-90 \$
SOURCES OF FUNDS			
Funds from Operations	22		
Inflows of funds from operations			
Sales revenue		1,558,715	1,546,580
Parliamentary appropriations		10,164,000	9,266,000
Other revenue		3,989,073	3,381,577
		<u>15,711,788</u>	<u>14,194,157</u>
Outflows of funds on operations		<u>15,629,617</u>	<u>13,487,253</u>
		82,171	706,904
Reduction in Assets			
Current Assets			
Cash		115,255	-
Receivables		175,896	-
Other		-	3,240
Non-current Assets			
Property, plant and equipment		<u>31,673</u>	<u>64,381</u>
		322,824	67,621
Increase in Liabilities			
Current Liabilities			
Creditors		-	209,385
Other		18,485	13,124
Non-current Liabilities			
Other		<u>170,053</u>	<u>1,008,892</u>
		188,538	1,231,401
Total sources of funds		<u>593,533</u>	<u>2,005,926</u>
APPLICATIONS OF FUNDS			
Increase in Assets			
Current Assets			
Cash		-	1,234,421
Receivables		-	195,005
Inventories		1,617	3,000
Other		25,484	-
Non-current Assets			
Property, plant and equipment		<u>361,581</u>	<u>573,500</u>
		388,682	2,005,926
Reduction in Liabilities			
Current Liabilities			
Creditors		111,991	-
Other		89,966	-
Non-current Liabilities			
Other		<u>2,894</u>	-
		204,851	-
Total applications of funds		<u>593,533</u>	<u>2,005,926</u>

The accompanying notes form an integral part of these financial statements.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS
for the year ended 30 June 1991

1. ACCOUNTING POLICIES

The following accounting policies have been adopted in the preparation of the accounts.

(a) Accounts Format

The accounts of the Authority have been prepared in accordance with:

- the 'Guidelines for Financial Statements of Commonwealth Entities', issued by the Minister for Finance in June 1991 ; and
- applicable accounting concepts and standards.

The format of the financial statements has been changed with regard to the presentation of the Great Barrier Reef Aquarium activities. Historically the Authority prepared its financial statements in the form approved by the Minister for Finance. This form required a separation of the Great Barrier Reef Aquarium operating result through the presentation of a " Profit and Loss Statement " and distinctions within the " Statement of Assets and Liabilities " and " Statement of Sources and Applications of Funds ". The release of the "Guidelines for Financial Statements of Commonwealth Entities" by the Minister for Finance offered the Authority the opportunity to standardize its form of financial statements.

In the 1990-91 financial statements the GBR Aquarium is treated as a separate program in the Statement of Activity, with no distinction maintained in the "Statement of Financial Position" and "Statement of Sources and Applications of Funds". This treatment is consistent with the above-mentioned guidelines. However additional disclosure of the GBR Aquarium activities is made at Note 4. The comparative figures for the 1989-90 financial year have been adjusted to the new format. However, the elimination of internal transactions between the GBR Aquarium and other operations of the Authority may result in instances where figures over the two financial years are not comparable.

(b) Historical Cost Convention

These accounts have been prepared on the basis of the historical cost convention and except where stated do not show the current cost of specific assets and the impact of such costs on operating results.

(c) Non-current Assets

The capitalisation limit for non-current assets was increased from \$400 to \$1,500 effective for the 1990-91 financial year. This has been the first adjustment to the limit since the commencement of accrual accounting in the statements of the year ended 30 June 1986. Assets with an original cost of less than \$1,500 have been written off in the current financial year at their written down value. This write-off is shown as an abnormal item in the Statement of Activity.

Great Barrier Reef Aquarium -

The Great Barrier Reef Aquarium building was funded as a Commonwealth-State Bicentennial project, through the Great Barrier Reef Wonderland Association Incorporated. The Aquarium is sub-leased by the Authority from the Association for a period of 75 years. Under the terms of the sub-lease agreement the Authority is responsible for the replacement of the Aquarium building as necessary and for all expenses and revenue in relation to its operation. Consequently, the value of the Aquarium building has been taken up as an asset in the Authority's accounts

and is being amortised over 25 years, which is the estimated useful life of the building.

The base stock of audio visual displays at the Great Barrier Reef Aquarium and the base stock of marine life, sand, coral and water in the Aquarium have been included under non-current assets as a non-depreciable item. Stock replacement costs are treated as operating expenses.

(d) Advances to Consultants

Under the terms of certain contracts with consultants, payments are made in advance. Expenditure on assets which, under the terms of the contract, become the property of the Authority from the date of acquisition is fully expensed in the year of payment. On completion of the contract, such assets are brought on charge by the Authority at that time, at their written down value and depreciated over their remaining useful life. This is a change from treatment in previous years when such assets were taken up in the accounts of the Authority at the time of purchase. The assets which were in the accounts of the Authority as at 30 June 1990 have been written off in the financial statements for the year ended 30 June 1991 as an abnormal item in the Statement of Activity.

(e) Day-to-day Management Advances

Except for expenditure on fixtures upon land owned by or under the direct control of the Commonwealth or the Authority, advances to the Queensland Department of Environment and Heritage for day-to-day management are fully expensed in the year of payment (refer to Note 2 for details of the day-to-day management item).

(f) Stock on Hand

Goods for resale have been valued at the lower of cost and net realizable value.

(g) Provision for Long Service Leave

Provision has been made for pro-rata entitlements of all staff who have at least five years eligible service at balance date. The current liability represents the estimated value of long service leave that is proposed to be taken by staff during the succeeding year.

(h) Superannuation

Staff of the Authority are employed under the Public Service Act and prior to 1988-89 there had been no obligation in respect of employer contributions to the Commonwealth Superannuation Scheme. However, as the Authority is required to manage the Great Barrier Reef Aquarium on a cost recovery basis, employer superannuation contributions for Aquarium employees became payable from 1 July 1988.

2. DAY-TO-DAY MANAGEMENT OF THE GREAT BARRIER REEF MARINE PARK

(a) Principles agreed between the Commonwealth and Queensland Governments relating to the day-to-day management of the Great Barrier Reef Marine Park provide for:

the Queensland Department of Environment and Heritage (QDEH) to carry out the day-to-day management of the Great Barrier Reef Marine Park, subject to the Authority

- the Commonwealth to fund 100% of an initial capital works program (in the first three years or so) required to establish management of the Great Barrier Reef Marine Park on a sound basis; other capital costs (i.e. the post-initial program) of day-to-day management of the Great Barrier Reef Marine Park to be shared equally between the two Governments
- the Commonwealth and Queensland to meet in equal shares the recurrent costs for day-to-day management in relation to the Great Barrier Reef Marine Park (which may include Queensland national parks or Queensland marine parks, the use or management of which would or might affect the Great Barrier Reef Marine Park)
- moveable property funded pursuant to the arrangements to be used and administered by Queensland; proceeds from the sale of any such moveable property are paid into the day-to-day management account to offset Commonwealth/Queensland contributions on a 50:50 basis
- fixed assets funded pursuant to the arrangements to be used by Queensland and administered by the Government (or the Authority) which owns or controls the land on which the fixture is located
- expenditure on day-to-day management to be in accordance with an annually agreed program, and
- the Authority to administer funds provided by the Commonwealth and Queensland for these purposes.

(b) The Commonwealth appropriation for day-to-day management was made up of:

	1990-91	1989-90
	\$	\$
(i) Recurrent and Post-Initial Capital Programs	2,630,000	2,191,140
(ii) Initial Capital Works	554,000	535,860
	<u>3,184,000</u>	<u>2,727,000</u>

(c) The total Queensland contribution to day-to-day management was \$2,586,000 in 1990-91 compared with \$2,191,140 in 1989-90.

(d) Financial statements for day-to-day management which have been prepared by QDEH and audited by the Queensland Auditor-General are at Note 23.

3. REVENUE

(a) Parliamentary appropriations comprised the following:

	1990-91	1989-90
	\$	\$
Operational	6,980,000	6,539,000
Commonwealth contribution to day-to-day management	<u>3,184,000</u>	<u>2,727,000</u>
	<u>10,164,000</u>	<u>9,266,000</u>

Refer to Notes 2(a) and 2(b) for additional detail on Commonwealth contribution to day-to-day management.

(b) Miscellaneous revenue comprised the following:

	1990-91	1989-90
	\$	\$
Payments from the GBR Aquarium for employer superannuation contributions and establishment costs repayment	-	198,944
Monies for industry funded monitoring and baseline studies	414,140	234,391
Sale of Authority education and information materials	67,821	74,700
Interest	245,940	280,174
Permit assessment fees	129,335	60,500
Recovered assets	-	6,613
Payments from QDEH: refer note 2(a)		
for - sale of moveables	203,553	83,332
- other receipts	14,052	-
Revenue from other miscellaneous sources	123,236	97,080
	<u>1,198,077</u>	<u>1,035,734</u>

Obligations to the Department of Finance in relation to employer superannuation contributions for the Great Barrier Reef Aquarium and the repayment of establishment costs are initially met by an offset from Authority appropriations. No establishment cost repayment was due in 1990-91 (refer Note 15) and recovery of 1990-91 GBR Aquarium superannuation contributions was not sought by the Authority.

4. AQUARIUM REVENUE AND EXPENSES

(a) Revenue of the Aquarium comprised the following:

	1990-91	1989-90
	\$	\$
Admission fees	1,307,254	1,289,885
Donations and sponsorships	2,321	25,311
Membership program	13,346	18,434
Interest	125,141	24,945
Donated assets	-	27,229
Recovered assets	-	688
Other revenue	51,850	33,578
	<u>1,499,912</u>	<u>1,420,070</u>
Shop Sales	251,461	256,695
Less: Cost of goods sold refer note 4(b)	140,145	139,915
Gross profit from shop trading	<u>111,316</u>	<u>116,780</u>
Total Aquarium Revenue	<u>1,611,228</u>	<u>1,536,850</u>

(b) This item represents the cost of goods sold through the Great Barrier Reef Aquarium Shop as follows:

	1990-91	1989-90
	\$	\$
Opening Stock	69,872	66,872
Purchases	141,762	142,915
Less: Closing Stock	71,489	69,872
	<u>140,145</u>	<u>139,915</u>

(c) Expenses of the Aquarium comprised the following:

	1990-91	1989-90
	\$	\$
Curatorial Operations	75,424	52,611
Interpretative Facilities	37,078	60,253
Marketing/Promotions	126,615	111,138
Shop Management & Services	66,522	63,186
Repairs and Maintenance	67,676	47,119
Administrative Services		
-salaries and allowances	810,647	724,034
-superannuation refer note 1(h)	-	60,680
-property services	353,711	391,026
-general services	124,847	110,535
Interest	170,053	32,000
Bad debts written off	239	2,154
Loss on sale of non-current assets	10,994	4,238
Total Operating Expenses	<u>1,843,806</u>	<u>1,658,974</u>

(d) Unfunded charges of the Aquarium comprised the following:

	1990-91	1989-90
	\$	\$
Depreciation of property, plant & equipment refer note 1(c)	423,259	438,271
Staff provisions	20,274	16,638
Total unfunded charges	<u>443,533</u>	<u>454,909</u>
Total Aquarium Expenses	<u>2,287,339</u>	<u>2,113,883</u>
Result from Aquarium operations	<u>(676,111)</u>	<u>(577,033)</u>

This result excludes reimbursement of the 1990-91 GBR Aquarium superannuation contributions not sought by the Authority, (estimated at \$85,000).

5. CORPORATE MANAGEMENT AND SERVICES

Corporate management and services comprised the following:

	1990-91	1989-90
	\$	\$
Expenses of the Authority	192,867	159,658
Expenses of the Great Barrier Reef Consultative Committee	45,630	34,964
Executive and Secretariat	630,263	487,694
Administration	814,303	852,435
	<u>1,683,063</u>	<u>1,534,751</u>

The item "Expenses of the Authority" includes remunerations paid in accordance with the Remuneration Tribunal Determination to:

	1990-91	1989-90
	\$	\$
Chairman	80,303	74,151
Part-time members	17,429	12,162

The item "Expenses of the Great Barrier Reef Consultative Committee" includes sitting fees paid to part-time members in accordance with the Remuneration Tribunal Determination. In 1990-91 payments totalled \$10,721 compared with \$9,720 in 1989-90.

The item "Administration" includes the following:

	1990-91	1989-90
	\$	\$
Bad debts written off	613	448
Net loss on disposal of non-current assets	<u>8,341</u>	<u>35,625</u>
	<u>8,954</u>	<u>36,073</u>

6. TOTAL OPERATING EXPENSE BEFORE ABNORMAL ITEMS

Included in total operating expense before abnormal items are the following salaries and wages costs:

	1990-91	1989-90
	\$	\$
Great Barrier Reef Aquarium		
-Administrative Services	810,647	724,034
-Aquarium Shop	48,989	49,744
Other Authority Operations	<u>3,053,393</u>	<u>2,591,445</u>
	<u>3,913,029</u>	<u>3,365,223</u>

7. ABNORMAL ITEMS

Abnormal items comprise the following:

	1990-91	1989-90
	\$	\$
Write off previously capitalised items:		
- less than \$1,500 cost value	235,213	-
- held by outside organisations	<u>32,125</u>	<u>-</u>
	<u>267,338</u>	<u>-</u>

For additional detail refer to notes 1(c) and 1(d).

8. UNFUNDED CHARGES

The aggregate amount of unfunded charges of the Authority comprised the following:

	1990-91	1989-90
	\$	\$
Depreciation of property, plant & equipment refer note 1(c)	699,245	784,018
Long service leave	44,999	64,592
Annual leave	95,116	37,684
Superannuation refer note 1(h)	-	(67,241)
Leave fares	<u>(5,448)</u>	<u>11,843</u>
	<u>833,912</u>	<u>830,896</u>

9. CASH

Cash held at 30 June comprised the following:

	1990-91	1989-90
	\$	\$
Authority Operations Account	622,431	786,604
Great Barrier Reef Aquarium Account	722,417	1,010,520
Day-to-day Management Account	725,354	330,643
Cash on hand	<u>12,330</u>	<u>70,020</u>
	<u>2,082,532</u>	<u>2,197,787</u>

10. RECEIVABLES

	1990-91	1989-90
	\$	\$
Debtors	140,601	316,497
Less: Provision for doubtful debts	-	-
	<u>140,601</u>	<u>316,497</u>

11. PROPERTY, PLANT AND EQUIPMENT

	Cost		Accumulated Depreciation		Written Down Value	
	1990-91	1989-90	1990-91	1989-90	1990-91	1989-90
	\$	\$	\$	\$	\$	\$
Furniture, fittings & displays	231,902	377,185	70,800	115,217	161,102	261,968
Office machines	161,150	176,799	116,734	101,897	44,416	74,902
Audiovisual & photographic	273,014	319,945	48,052	72,702	224,962	247,243
Marine & diving	24,522	43,687	15,366	23,211	9,156	20,476
Computer hardware	1,106,824	1,114,377	477,035	482,696	629,789	631,681
Computer software	277,886	267,760	115,821	94,113	162,065	173,647
Scientific & technical	70,502	148,394	37,155	65,584	33,347	82,810
Vehicles & mobile plant	75,306	77,959	29,384	23,110	45,922	54,849
Other plant & equipment	512,868	549,426	118,526	109,735	394,342	439,691
Aquarium contents	343,576	343,576	-	-	343,576	343,576
Improvements to leasehold property						
- Fixtures & fittings	292,917	291,246	45,153	34,516	247,764	256,730
- Aquarium building	7,512,831	7,503,295	1,443,169	1,088,091	6,069,662	6,415,204
Total	<u>10,883,298</u>	<u>11,213,649</u>	<u>2,517,195</u>	<u>2,210,872</u>	<u>8,366,103</u>	<u>9,002,777</u>

12. PROVISIONS

Additional detail relating to provisions is as follows:

	1990-91	1989-90
	\$	\$
Current liabilities		
Provision for long service leave refer note 1(g)	-	17,268
Provision for annual leave	493,436	398,320
Provision for leave fares	49,555	55,003
	<u>542,991</u>	<u>470,591</u>
Non-current liabilities		
Provision for long service leave refer note 1(g)	625,389	563,121
	<u>625,389</u>	<u>563,121</u>

13. HIRE PURCHASE AGREEMENT - AQUARIUM

Included in the totals for 'Other' Current and Non-current Liabilities are amounts

payable under a hire purchase agreement entered into by the Aquarium. The amounts payable are as follows:

	1990-91	1989-90
	\$	\$
Current Liabilities	3,846	3,812
Non-current Liabilities	5,998	8,892
	<u>9,844</u>	<u>12,704</u>

14. CURRENT AND NON-CURRENT LIABILITIES - OTHER

Included in the item "Other" are the following amounts:

		1990-91	1989-90
Current liabilities		\$	\$
Establishment cost repayment	refer note 15	-	90,000
Other current liabilities	refer note 13	122,500	103,981
		<u>122,500</u>	<u>193,981</u>
Non-current liabilities			
Establishment cost repayment	refer note 15	270,000	270,000
Advance from Dept of Finance	refer note 15	1,000,000	1,000,000
Interest on advance	refer note 15	170,053	-
Other non-current liabilities	refer note 13	5,998	8,892
		<u>1,446,051</u>	<u>1,278,892</u>

15. REPAYMENT OF ADVANCES FROM DEPARTMENT OF FINANCE

The Department of Finance has determined that funds appropriated for the purposes of the Great Barrier Reef Aquarium are repayable advances. The GBR Aquarium has received two such advances:

- \$450,000 in 1986-87 for establishment costs; and
- \$1,000,000 in 1989-90.

The advances are being repaid in the form of instalments deducted from Authority appropriation and made up from GBR Aquarium revenue. Interest on the outstanding principal is charged at the long term bond rate.

Scheduled repayments in respect of the establishment costs advance were made in 1988-89 and in 1989-90. The repayments for remaining balance of the establishment costs advance together with the other advance in 1989-90 were consolidated and scheduled to be repaid over a period of ten years. The first repayment is due to be made in the 1992-93 financial year.

16 TRUST MONEY

GREAT BARRIER REEF MARINE PARK AUTHORITY TRUST MONEYS
Statement of Receipts and Payments for the year ended 30 June 1991

	1990-91
	\$
Cash at bank 1 July 1990	8,500
RECEIPTS	
Cash Bonds in lieu of bank guarantees	91,300
Interest	2,859
	<u>94,159</u>
TOTAL	<u>102,659</u>
PAYMENTS	
Payment under bank guarantee	8,500
Bank charges	2
TOTAL PAYMENTS	8,502
Cash at bank 30 June 1991	<u>94,157</u>
TOTAL	<u>102,659</u>

17. INSURANCE

The Authority has a policy of self-insurance for its general operations but has commercial insurance cover for the operation of the Great Barrier Reef Aquarium.

18. LEASES

- (a) The aggregate amount of operating leases contracted for and outstanding as at 30 June 1991 is \$ 2,631,822. These leases are for office accommodation and the discharge will be:

	1990-91	1989-90
	\$	\$
Within one year	465,202	457,121
In the second year	433,324	440,863
Within a three to five year period	1,299,972	1,227,912
Later than five years	<u>433,324</u>	<u>818,608</u>
	<u>2,631,822</u>	<u>2,944,504</u>

- (b) The Authority sub-leases the Great Barrier Reef Aquarium building from the Great Barrier Reef Wonderland Association Incorporated for a nominal amount payable if demanded.

19. COMMITMENTS FOR CAPITAL EXPENDITURE

The Authority had no outstanding commitments for capital expenditure as at 30 June 1991, (1989-90 \$43,881).

20. RESOURCES PROVIDED FREE OF CHARGE TO THE AUTHORITY

The following resources were provided free of charge to the Authority and accordingly are not reflected as expenses in the Statement of Activity:

	1990-91	1989-90
	\$	\$
(a) External audit services (the Australian National Audit Office audits the Authority's accounts)	36,000	33,900
(b) Coastal Surveillance	680,960	640,000

21. CONTINGENT LIABILITIES

The Authority is unaware of any contingent liability existing as at 30 June 1991.

22. RECONCILIATION OF OPERATING RESULT WITH FUNDS FROM OPERATIONS

Reconciliation of operating result with funds from operations is as follows.

	1990-91	1989-90
	\$	\$
Operating result	(1,019,079)	(107,729)
Add: - Depreciation of property, plant and equipment	699,245	784,018
- Long service leave	44,999	64,592
- Annual leave	95,116	37,684
- Leave fares	(5,448)	11,843
- Superannuation	-	(83,504)
- Abnormal Items	<u>267,338</u>	<u>-</u>
Funds from operations	<u>82,171</u>	<u>706,904</u>

Refer to Note 1(h) for additional detail on superannuation.

23. QUEENSLAND DEPARTMENT OF ENVIRONMENT AND HERITAGE
 GREAT BARRIER REEF MARINE PARK
 STATEMENT OF RECEIPTS AND PAYMENTS FOR THE YEAR ENDED
 30 JUNE 1991

1989 - 90		1990- 91	
\$		\$	\$
	The balance at 1 July comprised -		
	Recurrent Costs		
29,648	Salaries and Wages	34,291	
80,261	Operating Costs	35,622	
	Capital Works and Services		
222,541	Initial Program	210,850	
37,057	Post Initial Program	317,023	
30,730	Balance of proceeds from sale of Moveables	-	
400,237			597,786
	Receipts for the year were -		
	Recurrent Costs		
1,968,479	Salaries and Wages	2,344,835	
1,947,658	Operating Costs	2,525,445	
	Capital Works and Services		
409,314	Initial Program	317,844	
466,144	Post Initial Program	426,818	
52,602	Disposal of Moveables	214,665	
-	Other Receipts	14,052	
4,844,197	Total Receipts (Note 3)		5,843,659
	Against which the following payments were made -		
	Recurrent Costs		
1,963,836	Salaries and Wages	2,320,481	
1,992,297	Operating Costs (Note 4)	2,579,094	
	Capital Works and Services		
421,005	Initial Program (Note 5)	289,557	
186,178	Post Initial Program (Note 5)	641,080	
83,332	To GBRMPA for Moveables sold	203,553	
-	To GBRMPA for Other Receipts	14,052	
4,646,648	Total Payments		6,047,817
197,549	Resulting in an excess (deficit) of receipts over payments of -		(204,158)
	Leaving a balance at 30 June comprising-		
	Recurrent Costs		
34,291	Salaries and Wages	58,645	
35,622	Operating Costs	(18,027)	
	Capital Works and Services		
210,850	Initial Program	239,137	
317,023	Post Initial Program	102,761	
-	Balance of proceeds from sale of Moveables	11,112	
597,786			393,628

The accompanying notes form an integral part of these financial statements.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENT

Note 1 Statement of Accounting Policies

(a) Basis of Accounts

The accounts have been prepared on a cash basis, consistent with the basis applied in the previous financial year and in the form approved by the Minister for Finance (Commonwealth), as required by the Agreement.

(b) Transfer to the Queensland Treasury Department

The balance of Commonwealth funds for the Great Barrier Reef Marine Park at 30 June 1991, which does not include the balance of proceeds from the sale of moveables, was transferred to the Treasury Department in terms of that Department's requirements. The amount transferred has been refunded to the Department of Environment and Heritage in July 1991. The total of receipts included in the Statement of Receipts and Payments for the year ended 30 June 1991 represents gross receipts excluding the transfer.

Note 2 Statement of Significant Items Outside the Ambit of the Statement

(a) Current Assets/Liabilities

Current assets and liabilities stood at a normal level at the beginning and end of the year.

(b) Contingent Assets/Liabilities

There were no known contingent assets or liabilities of a significant nature at 30 June 1991 (1990 \$NIL).

(c) Statement of Capital Assets (at cost) as at 30 June 1991, including movements for 1990-91 financial year.

	Funded by Commonwealth (cumulative from 1 July 1981)			Balance 30/6/91 \$
	Balance 1/7/90 \$	Acquisition 1990-91 \$	Disposal/ Write Offs 1990-91 \$	
Buildings and infrastructure	1,230,733	138,180	-	1,368,913
Vessels and associated equipment	826,413	189,986	114,610	901,789
Vehicles	281,510	158,910	144,370	296,050
Other plant and equipment	888,948	123,021	58,607	953,362
	<u>3,227,604</u>	<u>610,097</u>	<u>*317,587</u>	<u>3,520,114</u>
	Funded by Queensland (cumulative from 1 July 1981)			Balance 30/6/91 \$
	Balance 1/7/90 \$	Acquisition 1990-91 \$	Disposal/ Write Offs 1990-91 \$	
Buildings and infrastructure	114,068	16,819	-	130,887
Vessels and associated equipment	137,533	137,772	14,439	260,866
Vehicles	126,968	126,590	57,083	196,475
Other plant and equipment	103,534	39,359	7,063	135,830
	<u>482,103</u>	<u>320,540</u>	<u>**78,585</u>	<u>724,058</u>
TOTAL	<u>3,709,707</u>	<u>930,637</u>	<u>396,172</u>	<u>4,244,172</u>

* The cumulative figure for Commonwealth funded assets other than Buildings and Infrastructure in 1990-91 has been reduced by \$317,587 (1989-90 \$33,527). This represents

the cost price of the assets disposed of and written off during the year.

**The cumulative figure for Queensland funded assets other than Buildings and Infrastructure in 1990-91 has been reduced by \$78,585 (1989-90 \$NIL). This represents the cost price of the assets disposed of and written off during the year.

Stocktakes of assets other than Buildings and Infrastructure were carried out by officers of the Department of Environment and Heritage and equipment on hand was verified against the Moveable Lists. As a physical verification of Buildings and Infrastructure has not been carried out, values included in this note for this class of asset reflect purchase costs.

(d) Statement of Assets Disposed of/Written Off during 1990-91

A significant number of assets other than Buildings and Infrastructure were written off in 1990-91 following the adjustment of accounting records as a consequence of stocktakes performed.

	Funded by Commonwealth		Funded by Queensland	
	1989-90 \$	1990-91 \$	1989-90 \$	1990-91 \$
Sale/Transfer of Assets	33,527	228,264	-	75,184
Write off due to:				
Damage and Obsolescence/Worn Out	-	76,902	-	276
Other	-	12,421	-	3,125
	<u>33,527</u>	<u>317,587</u>	<u>-</u>	<u>78,585</u>

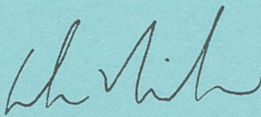
	1989-90 \$	1990-91 \$
Note 3 Receipts during the year were provided from the following sources:		
Commonwealth Government:		
Recurrent 50%		
Salaries and Wages	984,239	1,172,417
Operating Costs	973,829	1,262,723
Capital Works and Services:		
Initial Program 100%	409,314	317,844
Post-Initial program 50%	233,072	213,409
	<u>2,600,454</u>	<u>2,966,393</u>
Queensland Government:		
Recurrent 50%		
Salaries and Wages	984,240	1,172,418
Operating Costs	973,829	1,262,722
Capital Works and Services		
Post-Initial Program 50%	233,072	213,409
	<u>2,191,141</u>	<u>2,648,549</u>
Disposal of Moveables	52,602	214,665
Other Receipts	-	14,052
Total Gross Receipts	<u>4,844,197</u>	<u>5,843,659</u>

	1989-90	1990-91
	\$	\$
Note 4 Operating Costs :		
Superannuation	175,376	202,016
Payroll tax	98,775	113,759
Travel and subsistence	144,035	223,665
Office services and requisites	402,822	403,290
Field support, project requisites and consultancies	417,516	409,848
Staff development and requisites	27,771	205,436
Vessel and vehicle maintenance and running	406,283	420,877
Vessel charter	79,686	400,453
Aircraft charter	240,033	199,750
	<u>1,992,297</u>	<u>2,579,094</u>
Note 5 Capital Works and Services		
-Initial Program		
Buildings and infrastructure	95,084	121,361
Vessels and associated equipment	190,715	52,214
Vehicles	44,809	32,320
Office and field equipment	90,397	83,662
	<u>421,005</u>	<u>289,557</u>
-Post Initial Program		
Buildings and infrastructure	44,591	33,638
Vessels and associated equipment	35,466	275,545
Vehicles	35,026	253,180
Office and field equipment	71,095	78,717
	<u>186,178</u>	<u>641,080</u>
	<u>607,183</u>	<u>930,637</u>

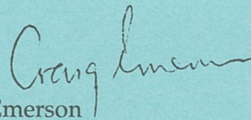
**CERTIFICATE OF THE QUEENSLAND DEPARTMENT OF
ENVIRONMENT AND HERITAGE**

We have prepared the foregoing annual financial statement in relation to the operation of the Great Barrier Reef Marine Park as required by the relevant Agreements dated 10 May 1988 between the Commonwealth and Queensland Governments and the Great Barrier Reef Marine Park Authority and certify as follows -

- (a) the foregoing financial statement and appended notes to and forming part thereof are in agreement with the accounts and records of the Queensland Department of Environment and Heritage;
- (b) the receipt and expenditure of monies were in accordance with the approved programs and in accordance with the aforementioned agreements and previous draft agreements executed between the Commonwealth and Queensland Governments with regard to day-to-day management and control and ownership of assets; and
- (c) in our opinion-
 - (i) the prescribed requirements in respect of the establishment and keeping of accounts have been complied with in all material respects; and
 - (ii) the foregoing annual financial statement has been drawn up so as to present a true and fair view, on a basis consistent with that applied in the financial year last preceding, of the transactions of the Queensland Department of Environment and Heritage in relation to the Great Barrier Reef Marine Park for the period 1 July 1990 to 30 June 1991 and of the financial position as at the close of that year.



C. Nicolson
Assistant Director (Financial Services)
Department of Environment and Heritage
29/8/91

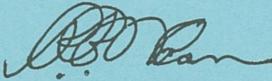


C. Emerson
Director General
Department of Environment and Heritage
29/8/91

CERTIFICATE OF THE AUDITOR-GENERAL

I certify that, in my opinion:

- (1) the foregoing Statement of Receipts and Payments and appended notes for the period 1 July 1990 to 30 June 1991 are based on proper accounts and records and are in agreement with those accounts and records; and
- (2) the expenditure of moneys was in accordance with the relevant Agreements dated 10 May 1988 between the Commonwealth and Queensland Governments and the Great Barrier Reef Marine Park Authority in respect of financial assistance for the Great Barrier Reef Marine Park.



P.B. Nolan
Auditor-General
29/8/91

AUDITOR - GENERAL'S REPORT

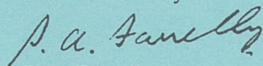
The Honourable the Minister for Arts
Sport, the Environment, Tourism and Territories
Parliament House
CANBERRA ACT 2600

Dear Minister

GREAT BARRIER REEF MARINE PARK AUTHORITY AUDIT REPORT ON FINANCIAL STATEMENTS

Attached is the audit report for the Great Barrier Reef Marine Park Authority for the year ended 30 June 1991, together with a copy of the signed financial statements.

Yours sincerely



P.A. Farrelly
Group Director
Australian National Audit Office

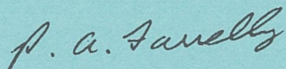
GREAT BARRIER REEF MARINE PARK AUTHORITY AUDIT REPORT ON FINANCIAL STATEMENTS

I have audited the financial statements of the Great Barrier Reef Marine Park Authority for the year ended 30 June 1991 in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. The statements comprise:

- . statement of activity
- . statement of capital accumulation
- . statement of financial position
- . statement of sources and applications of funds
- . certificate by Chairman and Executive Officer, and
- . notes to and forming part of the financial statements.

In accordance with sub-section 63M(2) of the Audit Act 1901, I now report that the attached statements are in agreement with the accounts and records of the Authority, and in my opinion:

- (i) the statements are based on proper accounts and records
- (ii) the statements show fairly the financial transactions for the year ended 30 June 1991 and the state of affairs of the Authority at that date
- (iii) the receipt, expenditure and investment of moneys, and the acquisition and disposal of assets, by the Authority during the year have been in accordance with the Audit Act, and
- (iv) the statements are in accordance with the Guidelines for Financial Statements of Commonwealth Entities.

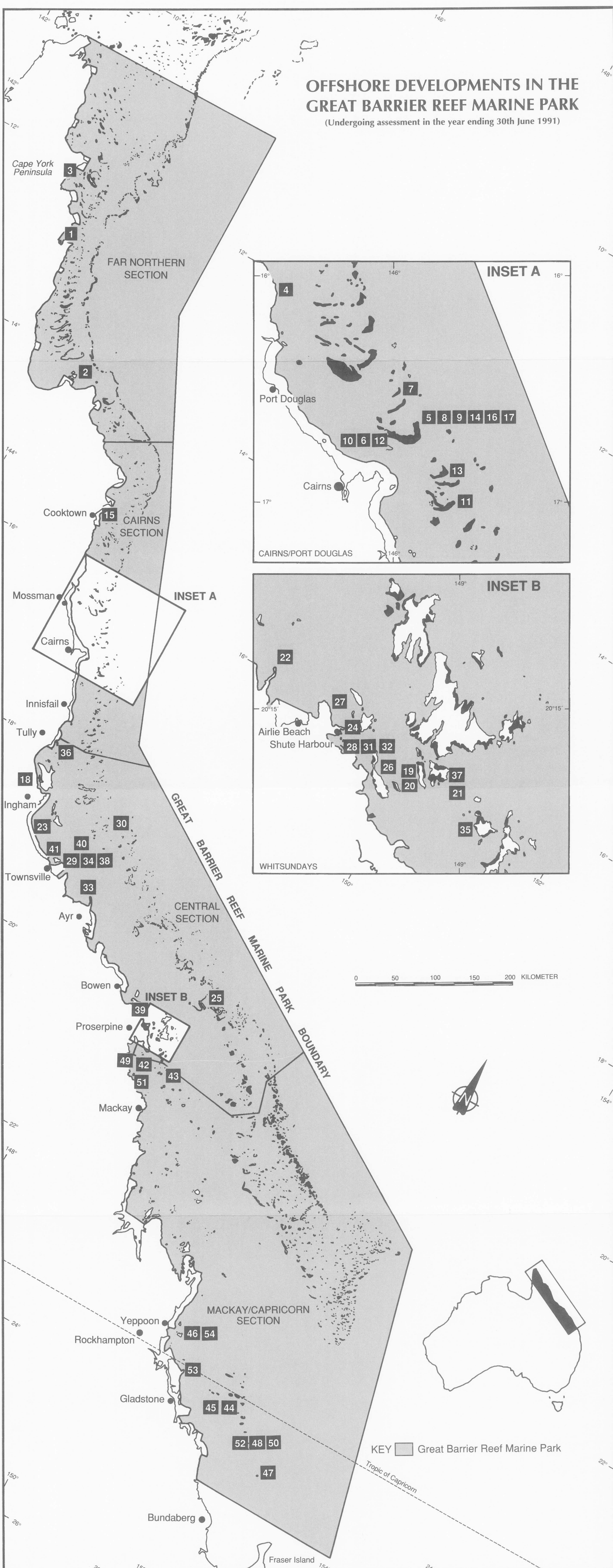


P.A. Farrelly
Group Director
Australian National Audit Office
18 October 1991

Table 11. New and existing proposals subject to assessment and monitoring in 1990-91

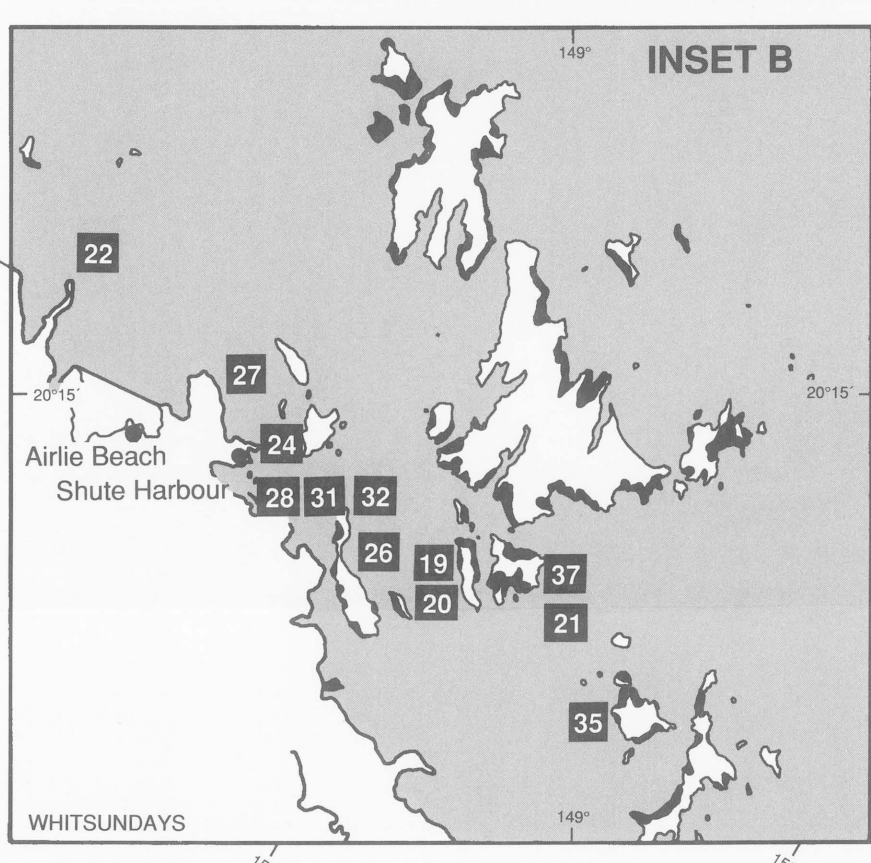
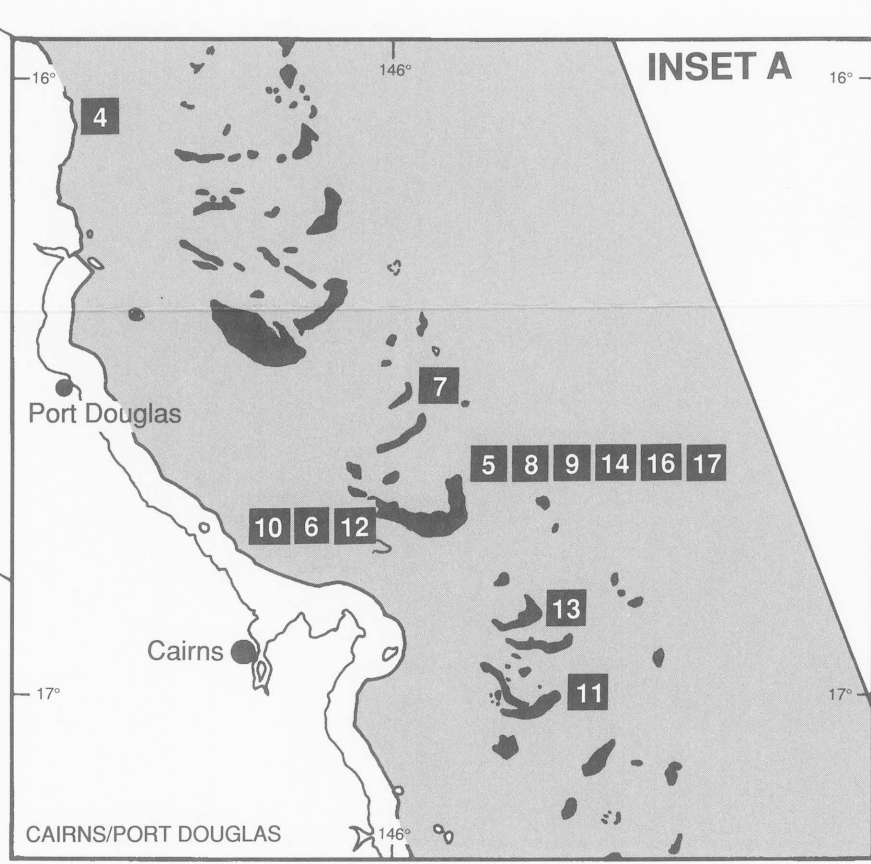
No	Place	Project Types	Proponent	Current Status of Applications	In the Marine Parks
FAR NORTHERN					
1.	Lloyd Bay	Marina	Farndale Pty Ltd	Prelim assessment	Partially
2.	Owen Channel	Pearls	Barrier Pearls (Coutts)	Monitoring	Wholly
3.	Bromley	Space Base	Cape York Space Agency	Prelim assessment	Partially
CAIRNS					
4.	Baileys Creek	Marina	Suntel Pty Ltd	On hold	Partially
5.	Arlington Reef	Underwater Observatory	Tinsail Pty Ltd	EIS in progress, more info requested	Wholly
6.	Green Island	Underwater Observatory	Great Adventures	On hold pending finalisation of redevelopment plans	Wholly
7.	Hastings Reef	Pontoon	Dectar Pty Ltd	Prelim assessment	Wholly
8.	Arlington Reef	Pearl Farm	Atlantic Fishing Co (Foggin Reef Mariculture (Stevens))	Approved/Monitor	Wholly
9.	Arlington Reef	Clams	Reef Mariculture (Stevens)	Approved/Monitor	Wholly
10.	Green Is.	Resort Development	Daikyo	Preliminary planning phase	Partially
11.	Sudbury Reef	Clams	Pacific Clam (Marcum)	Site rehabilitation	Wholly
12.	Moore Reef	Pontoon	Dectar Pty Ltd	Public advertising completed 30/6/91	Wholly
13.	Moore Reef	Artificial Wreck	Tropical Traders (Devine)	Location to be determined	Wholly
14.	Arlington Reef	Pearls	APM	Site rehabilitation	Wholly
15.	Cooktown - 8 Offshore Reefs	Pearl Spat Collection	Pirate Pearls	Approved/Monitor	Wholly
16.	Arlington Reef	Pearl Farm	Mr K Lewis	Prelim assessment	Wholly
17.	Arlington Reef	Pearl Farm	WAP Holdings	Prelim assessment	Wholly
CENTRAL					
18.	Oyster Point	Marina	Resort Village Cardwell (Tekin)	In liquidation	Partially
19.	Dent Is.	Harbour	Hamilton Island Enterprises	Further Info requested	Partially
20.	Dent Is.	Golf Course	Hamilton Island Enterprises	IAS guidelines issued	Partially
21.	Hamilton Is.	Northern Harbour	Hamilton Island Enterprises	Renew application received	Partially
22.	Pioneer & Double Bay	Marina and Jetty	Kumagai/Wardley (Woodwark Bay)	IAS produced	Partially
23.	Halifax Bay	Ore Offloading Facility	Dallhold Nickel Management Pty Ltd	AAT hearing commences 1/7/91	Partially
24.	Katchors Cove	Marina	Shute Harbour Marinas	Approved - no work commenced to date	Partially
25.	Hardy Reef	Walkway	Hamilton Island Enterprises	PER submitted	Wholly
26.	Long Island	Marina	Eastpac	No formal application	Wholly
27.	Daydream Is.	Marina	Daydream Island Resort	Approved/Monitor	Partially
CENTRAL					
28.	Shute Harbour	Redevelopment	Seymour Porter	No formal application	Partially
29.	Cockle Bay	Marina	Punchon	Assessment begun	Partially
30.	Kelso Reef	Pontoon	Pure Pleasure Cruises	Installed/Monitor	Wholly
31.	Shute Harbour	Marina	Scotex Pty Ltd	IAS produced	Partially
32.	Shute Harbour	Marina	McInerney/Fergale Pty Ltd	IAS guidelines issued	Partially
33.	Cleveland Bay	Fish Farm	Hart	Approved/Monitor	Wholly
34.	Cockle Bay	Commercial Oyster Farm	Anderson	Site not approved	Wholly
35.	Lindeman Is.	Resort	Club Mediterranean	No formal application	Wholly
36.	Bedarra Island	Jetty	Australian Resorts Pty Ltd	Assessment in progress	Partially
37.	Hamilton Island	Airport Extension	Hamilton Island Enterprises	No formal application	Partially
38.	Centipede Reef	Pontoon	Mr D Tarca	No formal application	Wholly
39.	Clarks Cove	Marina	Hearstbrook Pty Ltd	No formal application	Partially
40.	Palm Island / White Lady Bay	Clam Farm	Dr R Braley	Approved/Monitor	Partially
41.	Magnetic Quays	Clam Farm / Research	Dr R Braley	Prelim assessment	Partially
MACKAY/CAPRICORN					
42.	Keswick Island	Resort	Transtate Pty Ltd	Prelim assessment	Partially
43.	St Bees Island	Resort	St Bees Island Pty Ltd	Prelim assessment	Partially
44.	Wistari Reef	Walkway/Pontoon	P & O Resorts Pty Ltd	Installed/Monitor	Wholly
45.	Heron Island	Jetty	P & O Resorts Pty Ltd	Installed/Monitor	Wholly
46.	Keppel Island	Resort	Australian Resorts Pty Ltd	Prelim assessment	Partially
47.	Lady Elliott Is	Resort-Education Program	Lady Elliott Is. Holidays P/L	Monitoring	Wholly
48.	Lady Musgrave Is	Pontoon	Mr L Woodrow	Prelim assessment	Wholly
49.	Midge Point	Marina	Whitsunday Gold P/L	Prelim assessment	Partially
50.	Lady Musgrave Is	Pontoon	Whitsunday Water Estates Pty Ltd	Prelim assessment	Wholly
51.	Halliday Bay	Resort	Great Barrier Reef Tourist Corporation Pty Ltd	Prelim assessment	Partially
52.	Fitzroy Island	Floating Hotel	Reef Village Resort Pty Ltd	Prelim assessment	Wholly
53.	Curtis Island	Resort	Mr C Soars	Renewal assessment	Partially
54.	Middle Island	Underwater Observatory	Monte Christo Properties Vibrosaun	Prelim assessment	Wholly
PROJECTS OUTSIDE THE MARINE PARK					
55.	Townsville Port	Outer Berth Development	Townsville Port Authority	IAS guidelines produced	Outside

* IAS - Impact Assessment Statement (QLD)
 EIS - Environmental Impact Statement (EP/IP) Act
 PER - Public Environment Report (EP/IP) Act



OFFSHORE DEVELOPMENTS IN THE GREAT BARRIER REEF MARINE PARK

(Undergoing assessment in the year ending 30th June 1991)



0 50 100 150 200 KILOMETER

KEY Great Barrier Reef Marine Park

