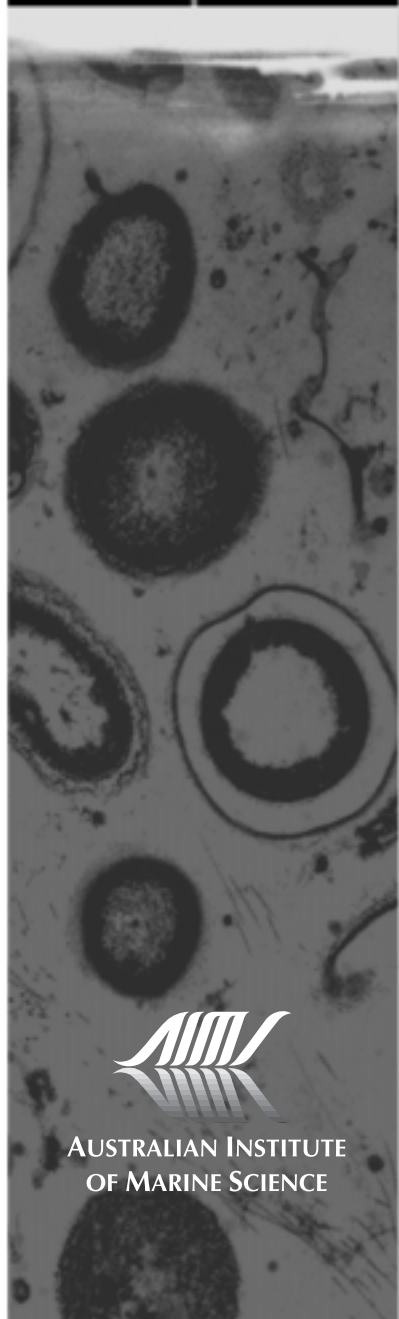


annual report



99|00



AUSTRALIAN INSTITUTE
OF MARINE SCIENCE

The research reported herein is based on the early analyses of complex data sets and should not be considered definitive in all cases. Institutions or individuals interested in all consequences or applications of the Institute's research are invited to contact the Director at the Townsville address given below.

Cover image shows Transmission Electron Microscope (TEM) image of *Rhopaloeides* sponge and symbionts cells.

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ISSN 1037-3314

Senator The Hon Nick Minchin
Minister for Industry, Science and Resources
Parliament House
Canberra ACT 2600

11 September 2000

Dear Minister

On behalf of the Council of the Australian Institute of Marine Science, we have pleasure in presenting the Institute's 28th annual report for the year ended 30 June 2000. The report is forwarded in accordance with Section 9 of the *Commonwealth Authorities and Companies Act 1997* (CAC Act).

This report provides information so that you, the Parliament, and users of the Institute's research outputs can make an informed judgement about AIMS' performance during the 1999–2000 financial year.

The report has been prepared in accordance with the *Commonwealth Authorities and Companies Orders 1998*. The Council endorsed the content of the annual report, including the report of operations, by a resolution of its meeting of 11 September 2000.

Yours sincerely



A E de Norbury Rogers
Chairman
Australian Institute of Marine Science



John D Bell
Acting Director
Australian Institute of Marine Science

ABOUT THIS REPORT

This report covers the final year of the 3-year (triennium) Research Plan described in the *AIMS Research Plan 1997–2000*. It describes the extent to which operations achieved the objectives of the Plan.

Highlights of research achievements have been included, showing the relevance and significance of the Institute's research effort of interest to the Minister, Parliament and users of AIMS research.

In 1999–2000 the Commonwealth Government shifted to an accrual-based, outcomes and outputs framework. This report provides an overview of performance information (pp. 5-6), which links our output (goods and services) to our agreed outcome: *Enhanced scientific knowledge supporting the protection and sustainable development of Australia's marine resources*.

In accordance with the 1997–2000 Resource Agreement between the Institute and the Ministers for Industry, Science and Resources, and Finance and Administration, this report gives details of performance against agreed indicators (pp. 106-107). Items complying with the requirements of the Joint Committee of Public Accounts and Audit (Departmental Annual Reports) have also been included: a table of contents; an alphabetical index (pp. 116-117); a compliance index (p. 115); and a glossary (pp. 110-111).

LEGISLATIVE REQUIREMENT

Clause 1 of Schedule 1 of the *Commonwealth Authorities and Companies Act 1997* (CAC Act) and the *Commonwealth Authorities and Companies Orders 1998* governs the content and presentation of this report. Items required for Departmental Annual Reports have been included where appropriate although they are not required of CAC agencies.

FURTHER INFORMATION

This report is available electronically on the AIMS web site (www.aims.gov.au). Printed copies of this report and other material produced by the Institute can be obtained from the Science Communication Manager at the Townsville address shown on p. ii.

Details of the types of information available on request and under the provisions of the *Freedom of Information Act 1982* are in Appendix 1.

OTHER PUBLICATIONS AVAILABLE

The *Strategic Directions* document and *Research Plan* are the Institute's peak planning documents and useful sources of information on the Institute and its operations. Both are available from Science Communication at the address shown on p. ii. The Institute provides on-line access to these and other publications. For details visit the AIMS web site (www.aims.gov.au).

CONTENTS

ABOUT THE AUSTRALIAN INSTITUTE OF MARINE SCIENCE	1
Mission	1
Strategic directions	2
Research focus	2
Research approach	5
Clients	7
MARINE SCIENCE ACHIEVEMENTS 1999-2000	9
REPORT OF OPERATIONS	19
Certification of Report of Operations	20
Part A: Council's Review of Operations and Future Prospects	21
The national context	21
The Institute's major outcomes in 1999-2000	22
Factors influencing AIMS' performance	22
Participation in significant partnerships	24
Plans for the future	26
Part B: Operational and Financial Results	28
Principal output	28
Major investing and financing activities	28
Performance indicators	28
Shift of resources to priority areas	28
Scientific publications	28
Patents	29
Scientific recognition	29
Contribution to Australia's future through teaching and training	32
Coordination of research and linkages with decision-making bodies	32
Collaboration	32
Input to policy making and implementation	34
Use of scientific advice	35
Adoption of practices, instruments and processes	35
Presentations	36
Status reports	36
Community involvement	36
External earnings	37
Joint ventures and strategic alliances	38
Spin-off businesses	38
Customer satisfaction	38
Significant changes in principal activities	39
Developments since the end of the financial year	39
Part C: Institute Structure and Corporate Governance	40
Enabling legislation and responsible Minister	40
Ministerial directions	40
Institute Structure	40
Council	40
Council meetings	44
Audit Committee	44
Audit Committee meetings	44

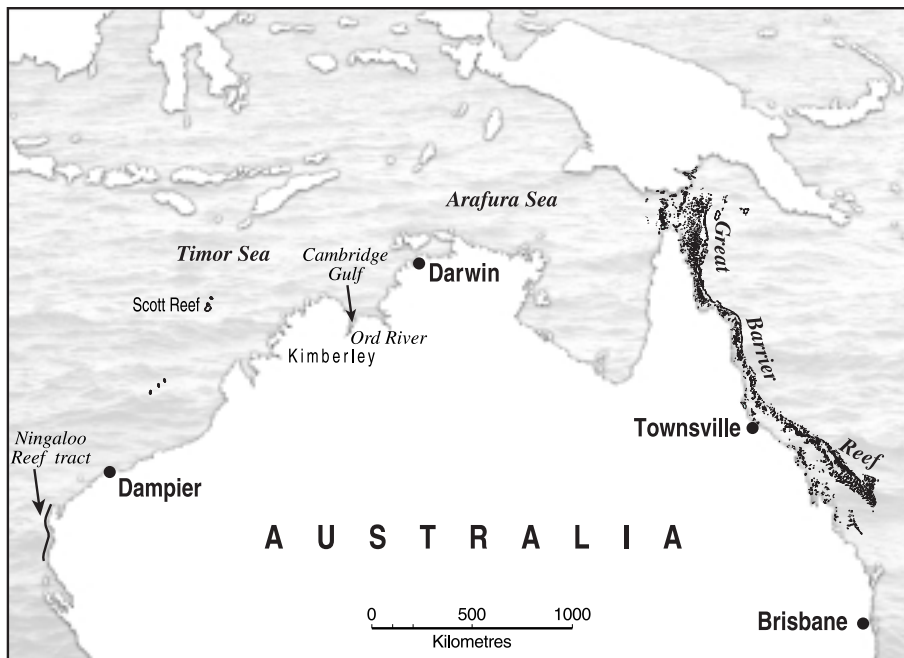
Executive Committee	45
Staff	45
Location of facilities and major activities	45
Corporate Governance	45
Structures	45
Processes	46
Controls	47
Council member's interests	47
Fraud control	47
Indemnities and insurance premiums for officers	47
Use of sub-contractors	47
Behaviour	48
Code of conduct	48
Judicial decisions and reviews by outside bodies	48
Policy and Administration	49
Efficiency gains	49
Social justice and equity	49
Staff consultation	50
Occupational Health, Safety and the Environment	50
Freedom of Information	51
Customer Service Charter	51
Year 2000 compliance	51
Advertising and market research	51
FINANCIAL STATEMENTS	53
Statement by AIMS Directors	54
Auditor General's Report	55
Financial Statements at 30 June 2000	57
APPENDIXES	87
1. Freedom of Information Statement	87
2. The Institute's legislative foundation and the exercise of Ministerial Powers	89
Enabling legislation	89
Functions	89
Powers of the Institute	89
Ministerial Powers of Direction	90
3. Research activities in the Marine domains of Australia's EEZ	91
4. Publications List	93
5. Triennium Agreement	106
6. Glossary	108
7. AIMS scientists' membership of government committees and NGOs	112
INDEXES	115
Compliance	115
Alphabetical	116

ABOUT THE AUSTRALIAN INSTITUTE OF MARINE SCIENCE

The Australian Institute of Marine Science (AIMS) is a Commonwealth Statutory Authority established by the *Australian Institute of Marine Science Act* of 1972.

The Institute's Mission is to generate the knowledge to support the sustainable use and protection of the marine environment through innovative, world-class scientific and technological research.

AIMS was established by the Federal Government in 1972 in recognition of the growing importance of the marine sector to Australia. Its first major laboratory was opened in 1977 at Cape Ferguson, near Townsville. This laboratory is adjacent to the geographic centre of the Great Barrier Reef, Australia's best known natural marine treasure, and one which is highly valued by the general community and marine industries alike.



In 1995 the Institute opened a small laboratory in Dampier, Western Australia, to provide a base for its growing research program in north west Australia. This program was established to support the conservation and management of the north and west marine zones of Australia, an area that has high conservation value and is rich in oil, gas, fisheries and minerals.

The Institute's research is building the knowledge base for industry development and marine conservation across the northern parts of Australia's Exclusive Economic Zone (EEZ). Since its establishment, the Institute has become a world centre for interdisciplinary tropical marine science. Our research products are recognised internationally and support Government initiatives such as *Australia's Oceans Policy* and *Australia's Marine Science and Technology Plan*.

STRATEGIC DIRECTIONS

The planned outcome of AIMS research is *enhanced scientific knowledge supporting the protection and sustainable development of Australia's marine resources*. The research effort contributing to this outcome is focused on five integrated strategic directions:

- ☐ The Ocean Environment - understanding the circulation of water, nutrients and sediments;
- ☐ Marine Biodiversity - characterising species richness and genetic variety;
- ☐ Marine Living Resources - managing valuable marine plants and animals;
- ☐ Ecologically Sustainable Development - measuring human impacts in the sea; and
- ☐ Technological Innovation - developing advanced instruments and techniques.

RESEARCH FOCUS

State and Commonwealth legislation directed to the coastal zone and Australia's marine resources are based on the tenets of ecologically sustainable development and the wise use of the precautionary principle. Much of AIMS' research is designed to build national capacity and to meet the challenges of *Australia's Oceans Policy* through actions consistent with the companion *Marine Science and Technology Plan*, with a focus upon the complex marine ecosystems of the tropics. These actions are described in the *AIMS Research Plan 1997–2000* and an updated version of the Plan that was released in July 1999. The actions correspond to the following eight key result areas.

1. HUMAN IMPACTS ON COASTAL MARINE ECOLOGY

This multidisciplinary project concentrates on the fate of materials entering the sea from tidal rivers, using knowledge and skills from physical, chemical and biological sciences. It includes long-term monitoring of water quality in the Great Barrier Reef Lagoon, for both excess nutrients and biotoxic pollutants.

Recreational and commercial fishing is another type of impact associated with centres of population along the coastal strip. Research is done in the context of understanding the functioning of healthy ecosystems, especially those of mangroves and seagrasses, which are thought to be biofilters as well as being habitats critical to the productivity of prawns and fish stocks. Our ideas are being tested by comparative studies in areas ranging from the Kimberley region of Western Australia (low population, low rainfall, pristine environment) to sites in Southeast Asia (high population, high rainfall, high environmental stress) in order to provide a context for ecological sustainability.

2. SUSTAINING CORAL REEFS

Information about the complexity and stability of coral ecosystems, including impacts from cyclones, crown-of-thorns starfish and coral 'bleaching' is gathered by this project. The project concentrates on distinguishing 'normal' change (reflecting geographic differences in evolutionary history, biogeographic processes and environmental settings) from changes that are attributable to human impacts. The project disseminates understanding through avenues that can be used readily by management organisations both within Australia and overseas. This includes the Institute's senior role within the Co-operative Research Centre for the Great Barrier Reef World Heritage Area, where tourism and fisheries industries have a significant forum.

3. MONITORING CHANGE IN TROPICAL MARINE BIOTA

This project monitors the status of corals, algae, reef fishes and crown-of-thorns starfish over the Great Barrier Reef. These annual surveys form a primary information source for the Great Barrier Reef Marine Park Authority as well as a basis for understanding the population dynamics and resilience of reef ecosystems. In addition to the Great Barrier Reef, Australia possesses significant coral reefs in north Western Australia. This region is also the site of rapidly growing industries including fishing, tourism, and petroleum development. During the triennium, the monitoring project made the first surveys of many of these reefs in order to provide baselines against which to track future changes.

4. MARINE BIOGEOCHEMISTRY OF CONTAMINANTS

Organic molecules, trace metals and natural radionuclides are used by this project to track changes in land use and climate over the past 200 years. Contaminants in the coastal zone from the energy, mining and agricultural industries are used as time tracers to distinguish human-induced impacts from natural environmental change. This project provides specialised consulting services to these major industries. Three contrasting regions (Northwest Australia, North Queensland, Papua New Guinea) have been selected to represent large and small river input to the coastal zone, and to provide variation in both ocean dynamics and land use history. In addition, AIMS is the lead agency in Project TROPICS. This is an international consortium of coastal oceanographers from Papua New Guinea, Indonesia, USA and Australia, who have combined resources to understand the transport and fate of terrestrial materials in the coastal seas.

5. SUPPORTING TROPICAL FISHERIES

This project has evolved from mapping diversity and habitats within the Great Barrier Reef to studying the response of fish populations to fishing pressure. Selected sites have been monitored for 20 years to learn how fish populations change over decadal time scales in response to natural disturbances. Such monitoring has identified recruitment as a key process, which in turn has led to a recent focus on fish spawning and larval dispersal. The Great Barrier Reef has been sampled extensively over the past decade to locate preferred nurseries of selected species and to determine travel between spawning sources and recruitment sinks. This work is currently being assimilated into models of water circulation to predict these larval source-sink connections. In addition, new work was started in this triennium to study the dynamics of food chains in tropical coastal waters and their impact on the replenishment process.

6. PREDICTING THE COASTAL MARINE ENVIRONMENT

The role of ocean circulation, waves and associated mixing processes in transporting marine organisms, ocean constituents and pollutants within Australia's tropical shelf waters are the concerns of this project. It seeks to understand and predict effects on both ecosystems and human-made structures. Consequently, this research supports much of the marine and environmental research undertaken at AIMS including work on biological, chemical and sedimentary processes. The unifying concept is the understanding of fluxes and balances of mass, energy, heat and solar radiation at widely varying scales of space and time. State-of-the-art computing and visualisation technologies are being used to develop predictive models for these processes.

7. MARINE BIOTECHNOLOGY: MARICULTURE, BIODIVERSITY AND GENETICS

This project uses molecular science and advanced genetic techniques to answer critical questions about the reproduction and genetics of cultured species and to investigate the nature and extent of genetic diversity in wild marine populations. The mariculture component concentrates on molecular regulation of development, growth and reproduction of the giant tiger prawn *Penaeus monodon*. This is the species most commonly farmed throughout Southeast Asia, with excellent prospects for further industry growth in tropical Australia. Work is also being done on the genetics of pearl oysters, giant clams and sea cucumbers.

8. MARINE BIOPRODUCTS

The project screens biochemicals that may be progressed to full development as clinical drugs or other beneficial products. These compounds are being sourced from Australia's marine biodiversity, which represents the richest marine genetic resources in the world. The drug discovery search is complemented by strategic research on biochemical responses to environmental stress. Marine organisms produce chemical signals, venoms, anti-fouling agents and biochemical means of protection from harmful environments. Understanding how these agents work has wide potential for commercial and biomedical applications. As an example, AIMS is currently negotiating with a partner to commercialise diagnostic kits to solve the public health nuisance that arises from paralytic shellfish poisoning.

RESEARCH APPROACH

Each project adopts a multidisciplinary approach using the synergies created through collaborative research to provide effective output. The multidisciplinary nature of environmental research means that projects often address several of the Institute's Strategic Directions.

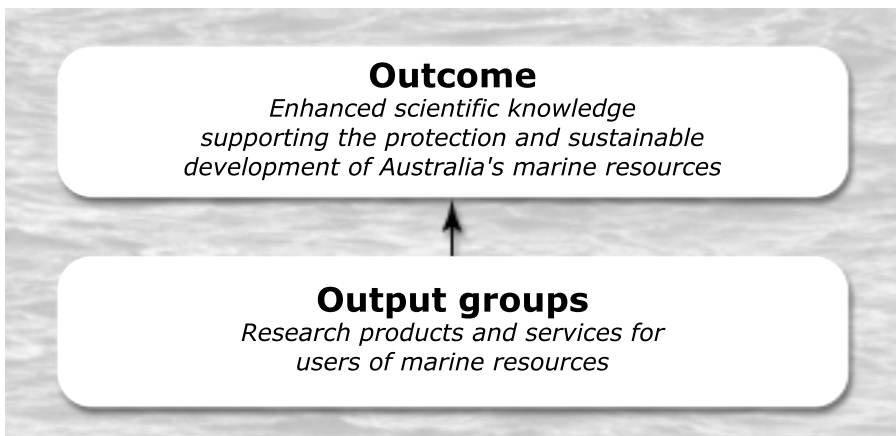
In developing an improved understanding, we seek to ensure industry and resource managers use our research results wherever possible. To this end, our business development strategies are designed to enable well-planned commercialisation of research results when suitable technology transfer opportunities arise.

PERFORMANCE PLANNING AND REPORTING

The planned outcome of AIMS' research is derived from the official functions of the Institute (see p. 89), the policies of government and the needs of users of marine research. AIMS contributes to this outcome by conducting scientific and technological R&D, providing science facilities and services, and facilitating the application or utilisation of the results of research, all of which offer strategic support for the effective use of Australia's valuable marine resources.

The Institute's research program is developed through extensive consultation (both formal and informal) with its clients (private and public sector and the community). Activities planned for the next triennium (2000-2003) are identified in the *Australian Institute of Marine Science Research Plan 2000-2003*. This document is available on the web at: www.aims.gov.au/pages/search/search-research-plans.html

A Planning, Reporting and Evaluation Cycle has been implemented across both research and support projects to ensure the relevance, quality and effectiveness of the Institute's research program. In addition, AIMS has reported against performance indicators since 1995 (see Appendix 5). These indicators recognise



the strategic national importance of science and technology and the longer-term cycles of research programs, which do not fit neatly into an annual accrual-based outcome and output-reporting framework. Research output in the reporting year may be the result of a research program begun several, or many, years before the reporting period. The indicators, reported in Part B of the Report of Operations, show an ongoing trend in the quality, quantity and effectiveness of the Institute's research products and services and are a valuable measure of performance.

CLIENTS

The Institute's clients are the users of marine science and technology: the Australian community, industries (predominantly marine), regulators and governments, policy developers, educators and students.

Agriculture	AIMS provides information relevant to the development of more accurate climate models for northern Australia and assesses the downstream impact of soil erosion and excess nutrients upon coastal ecosystems.
Aquaculture	AIMS supports the development of profitable and sustainable aquaculture in northern Australia through its research on domestication of valuable wild stocks and maintenance of water quality.
Australian community	AIMS transfers the results of marine science and technology to the community. It does this primarily through popular publications, internet web sites, public exhibitions and regular contact with the media.
Education	AIMS informs and trains the next generation of marine scientists. It does this through sponsorship and supervision of student projects, work experience, training workshops and publication of major texts.
Fisheries	AIMS provides science and advice in support of sustainable fisheries from Australia's northern Continental Shelf, benefiting commercial and recreational fishing and dive-based ecotourism.
Government	AIMS provides accurate and impartial advice to the Commonwealth Department of Industry, Science and Resources, Environment Australia, and state and local governments.
Marine parks	AIMS provides a broad range of information that is relevant to the management and conservation of marine biodiversity.
Mining	AIMS provides environmental assessments of downstream impacts from coastal mining developments.
Petroleum	AIMS provides research services to the oil and gas industry especially in the northwest of Western Australia and the Timor Zone of Cooperation.
Pharmaceuticals, chemical industries	AIMS searches the ocean for novel molecules from marine organisms that can be copied, grown or adapted to provide social and economic benefits for society.
Researchers	AIMS provides a diverse range of outputs that are used by other scientists and organisations, both nationally and internationally.
Tourism	AIMS provides research services to this sector primarily through its partnership in the CRC for the Great Barrier Reef World Heritage Area.

MARINE SCIENCE ACHIEVEMENTS

1999 - 2000

This report covers the final year of the triennium described in *AIMS Research Plan 1997–2000*. Outputs consistent with this plan were delivered across a range of areas and contributed to the Institute's proposed outcome under the accrual-based budget framework. Here are some of the highlights.

CORALS, SATELLITES AND SHIPS OF OPPORTUNITY REVEAL CLIMATE TRENDS

The hottest sea surface temperatures on record on the Great Barrier Reef occurred in 1998, coinciding with significant coral 'bleaching'. Using temperature records from weather stations and ships of opportunity, AIMS has shown that these conditions were associated with reduced wind speed due to a high-pressure anomaly that was part of large-scale ocean circulation anomaly. In a global analysis, it has been shown that the widespread coral 'bleaching' observed in 1997-98 (47 sites representing all major tropical seas) coincided with the hottest sea temperatures of the past century of instrumental records. This anomaly was linked to an unusually strong El Niño-Southern Oscillation event, and possibly enhanced by global warming.

There is concern that increasing global temperatures and greenhouse gases pose a long-term threat to the viability of coral reefs. One hypothesis is that rising levels of atmospheric carbon dioxide will make the seas more acidic and retard the ability of corals to deposit their calcareous skeletons. Analysis of long cores taken by AIMS from large massive corals has shown no sign of this effect. In fact, up to 1980, coral calcification rates on the Great Barrier Reef have been increasing. We conclude that impacts due to rising sea temperatures have so far dominated any declines caused by changing ocean chemistry. New cores are being collected now to determine whether this trend has continued to the end of the century.

THE IMPACT OF CORAL 'BLEACHING' ON THE GREAT BARRIER REEF

In 1998, the Great Barrier Reef experienced widespread coral 'bleaching', which is a sign that the corals have ejected the symbiotic algae that normally live within their tissues.

AIMS weather records showed that a combination of cloud-free skies, low winds and neap tides allowed the sun to heat the upper sea surface to extreme temperatures. Analysis of satellite images showed that tidal mixing saved a large number of outer shelf reefs from 'bleaching' because vertical stirring mixes the hot surface layers with the bulk temperature. This explains why the most severe 'bleaching' occurred in large coastal embayments, which trapped pockets of hot water, while the majority of the Great Barrier Reef was affected only lightly.

Prolonged 'bleaching' kills corals. On the worst affected inshore reefs, 'bleaching' caused widespread coral mortality in the area between Townsville and Port

Douglas. To put this in perspective, however, the AIMS Long-term Monitoring Project which surveys the status of more than 100 coral reefs showed that overall coral cover in the Great Barrier Reef has increased over the past few years despite this setback.

THE IMPACT OF CORAL ‘BLEACHING’ ON INDIAN OCEAN REEFS

Since 1994, AIMS has monitored the status of coral and fish communities on Scott Reef and the Rowley Shoals. These are oceanic reefs with high conservation value lying offshore of Western Australia. Between March and May 1998, severe coral ‘bleaching’ occurred on Scott Reef, which later resulted in 80 per cent mortality of the corals. This event differed from the ‘bleaching’ episode observed on the Great Barrier Reef both in cause and effect.

Observations by divers and remotely-operated vehicles showed extensive coral ‘bleaching’ down to 50m. Satellite observations showed that a large pool of unusually warm water formed in the eastern Indian Ocean at that time and that Scott Reef was bathed in this water for more than a month. The warm pool did not extend to the Rowley Shoals, which showed no ‘bleaching’.

Because of Scott Reef’s extreme isolation, recovery of the depleted coral communities there will depend upon the success of reproduction by the surviving corals. Recruitment studies, which monitor the settlement of coral spat, have shown negligible replenishment since the ‘bleaching’. This suggests a delayed stress response in the surviving corals and the possibility that recovery at Scott Reef will be extremely slow.

GROUND TRUTHING IMPROVES THE ACCURACY OF SATELLITE MEASUREMENTS

Comparison of data from underwater temperature loggers and satellites obtained during the 1998 coral ‘bleaching’ episode showed that the algorithm used by satellite oceanographers to model sea surface temperatures has an error of 0.8°C when applied to the Great Barrier Reef. The high water vapour content of the tropical atmosphere compared with the open oceans where the model has been calibrated is the most likely cause of this inaccuracy. AIMS designed a radiometer to mimic the satellite-mounted instrument and installed it on a tourist ferry operating a daily run from Townsville across the Great Barrier Reef Lagoon. These ground truth data, collected under a variety of sea states and sky conditions, were used to develop an improved algorithm with an error of only 0.4°C. This will allow sea surface temperatures to be monitored more accurately in all tropical oceans that have equivalent atmospheres.

MANGROVE ECOSYSTEMS PROVIDE A SINK FOR GREENHOUSE CARBON

Increases in atmospheric carbon dioxide from the combustion of fossil fuels have triggered a global debate about climate change. Models that predict the impact of these increases are still quite inaccurate because of the lack of empirical data on carbon fluxes within ecosystems. For example, there is debate about whether tropical forests, including mangroves, are a net source or sink for carbon. To inform this debate, a large-scale study funded by the Kansai Electric Power Company of Japan was conducted in Sawi Bay, southern Thailand, in collaboration

with Thai and Japanese scientists. This bay, like many others in Southeast Asia, had suffered significant losses of mangrove forests but has been replanted in an attempt to rehabilitate the ecosystem. The international team found that mangrove primary production and respiration were the largest source and sink of carbon in the entire bay. On balance, Sawi Bay is a net producer of organic carbon. A biogeochemical model showed that most of this carbon is accumulating as mangrove tree biomass rather than being exported to the adjacent Gulf of Thailand. This suggests that managed mangrove forest industries can provide a significant sink for atmospheric carbon due to the high rates of mangrove canopy production.

ECOLOGICAL SURVEYS GUIDE PROTECTION OF BIODIVERSITY IN THE GREAT BARRIER REEF WORLD HERITAGE AREA

After 25 years of operations, AIMS scientists have collected an enormous knowledge of the distributions of plants and animals, environments and habitats in the Great Barrier Reef World Heritage Area (GBRWHA). This knowledge was used by the Great Barrier Reef Marine Park Authority during the year in a major initiative, the Representative Areas Program, to protect the environmental and biological diversity of this huge ecosystem. A key strategy to protect that diversity will be the declaration of a comprehensive system of additional marine protected areas. The first step has involved the compilation and analysis of many thousands of records from different data sources, which resulted in the GBRWHA being classified into 35 'bioregions'. Each of these regions is characterised by unique features. The Authority is now selecting candidate areas to preserve a representative mix of this diversity.

NEW REEF MONITORING TRAINING AID RELEASED ON CD-ROM

The AIMS Long Term Monitoring Project has released a CD-ROM for people who wish to recognise the diverse life forms that make up a reef community and learn more about monitoring coral reefs. It provides interactive material that allows observers to practise their identification skills from a database of over 1,000 images, focused on corals and reef algae, and will provide a way for organisations involved in monitoring to apply consistent identification standards. Information is included from two international agencies (Reef Check, Global Coral Reef Monitoring Network) along with advice on how to assist these organisations in keeping a watch on the health of coral reefs.



SEA CUCUMBERS PROVIDE LESSONS FOR THE DESIGN OF MARINE PROTECTED AREAS

Recent research on a once-common sea cucumber (the black teatfish) has shed new light on how marine protected areas can help to sustain exploited species. Black teatfish are prized by Asian diners and for many years this species has dominated the export market for sea cucumbers from Australia. Faced with diminishing catches, Queensland recently suspended harvests of this species.

AIMS researchers have found that black teatfish are more abundant on unfished reefs than fished ones, revealing that the species is vulnerable to over-collection. However, area protection does not appear to be effective when it applies only to part of a small reef. In such cases, densities were similar in harvested and protected parts of the same reef. Partial protection appeared effective only when the refugia were large (several square kilometres).

NEW TOOLS TO MAP FLOOD PLUMES IN THE GREAT BARRIER REEF

Given that much of the Great Barrier Reef lies adjacent to the Wet Tropics, AIMS scientists are mapping river discharges as the first step to understanding the impacts of freshwater on coral reefs. This has been done both by computer modelling and direct measurement.

In the first study, a three-dimensional model of coastal hydrodynamics was created and interfaced with a comprehensive database of discharges from the major rivers draining into the Great Barrier Reef. These records cover most of the period of recent urban and agricultural expansion in North Queensland and suggest that the freshwater influence today is not greater than it was during the first half of the 20th century. The model shows that the brackish water plume from the Burdekin River travels 200-400 km northwards along the coast. In extreme events, such as the flood of 1974, river waters may reach mid-shelf reefs with a minimum dilution rate of 1 part river water to 3 parts coastal seawater. Lesser impacts can be expected every 2-3 years but the same reefs may not be affected every time as the plume dynamics are very sensitive to the prevailing weather. The model has been validated by finding a close match between its predictions of freshwater influence and the intensity of luminescent bands in massive coral colonies, which can be dated and record historical exposure to freshwater.

In the second study, researchers from AIMS and James Cook University obtained support from the Australian Research Council to develop a new method for mapping surface salinities of seawater using an instrument that can be flown on an aircraft or a satellite. This microwave radiometer was developed in conjunction with the National Oceanic and Atmospheric Administration (NOAA), the United States Navy and the University of Massachusetts. The prototype was flown in North Queensland on a modified Cessna from Airborne Research Australia, Australia's national aviation research facility attached to Flinders University of South Australia. During a week of work, the aircraft mapped salinities across the continental shelf between Cardwell and Ayr while surface vessels from AIMS and Queensland Parks and Wildlife Service took water samples for ground truth data. If the proof of concept is successful, the radiometer will be developed further for satellite deployment.

HISTORICAL MERCURY POLLUTION DISCOVERED IN BOWLING GREEN BAY

AIMS researchers have discovered a century old pollution event recorded in layers of mud in Bowling Green Bay, just east of Townsville. High concentrations of mercury were found 2.7m deep in the mud and radioactive dating established that these mercury-rich muds were deposited in 1870-1900. This is consistent with the use between 1880-90 of quicksilver imported from Almaden, Spain, to extract gold and silver from crushed ore rocks in the Charters Towers area. Mill wastes were probably washed into the Burdekin River and carried to Bowling Green Bay with the river mud.

Independent research at AIMS, using ultraviolet light fluorescence in coral cores as a historical tracer for river floods and droughts, showed that this 1870-1900 period experienced unusual frequencies of floods of the Burdekin River. These floods would have flushed the mercury from the river channels. After 1900, cyanide replaced quicksilver as the preferred method for extracting gold from ore. This incident of mercury pollution is now covered by 2.5m of soft mud, but the surface mud is still slightly enriched above natural (pre-1850) concentrations of mercury, due to mixing of the mud over 100 years of storms and tides. These concentrations, however, pose no risk to marine organisms.

AIMS/JCU COLLABORATE ON HEAVY METALS RESEARCH

A joint research project involving AIMS and James Cook University (JCU), seeking ways to manage the risks associated with heavy metal pollution, has developed methods for distinguishing between natural accumulation of these substances and pollution in sediments caused by human activity. The project involved collaboration with industry (BHP Cannington, Queensland Nickel (QNI) Yabalu), and the regulatory authorities (Townsville Port Authority, Great Barrier Reef Marine Park Authority). Greg Doherty, a PhD student enrolled at JCU, found that increased levels of heavy metals in sediments due to pollution derived from Townsville is not widespread even though metal concentrations in the environment have increased since 1900 in response to human activities. Ross Creek, a waterway that runs through the city of Townsville and into its port, was the only area surveyed where the heavy metal concentrations exceeded the Australia and New Zealand Environment and Conservation Council guidelines.



*PhD student Greg Doherty at Ross Creek
(Photo courtesy Townsville Bulletin)*

SUCCESSFUL COMPLETION OF THE MAJOR OPERATIONAL PHASE OF PROJECT TROPICS

Project TROPICS is an international multidisciplinary study of land-ocean interactions that has involved collaborations among scientists from Australia, USA, Japan, Indonesia and Papua New Guinea. The study has been coordinated since 1994 by AIMS geochemist Dr Gregg Brunskill. In 1999–2000, AIMS completed its initial plans for this research with two cruises on the national research facility *ORV Franklin*. These cruises off the north coast of PNG and in the Gulf of Papua sampled the continental shelves of a wet tropical region in a full La Niña year of high runoff, in contrast to TROPICS cruises in the El Niño years 1995-98. The plume of the Sepik River was tracked up to the Equator, which means that materials discharged from rivers on the north side of PNG can be carried to the central Pacific.

CLIMATE INFLUENCES SUCCESS OF LIZARD ISLAND GAMEFISHING TOURNAMENTS

Every year around September, large black marlin congregate to spawn in the Coral Sea adjacent to the Ribbon Reefs of the Great Barrier Reef. This time of year coincides with the development of warm waters and an intensification of the East Australian Current. A significant recreational (tag and release) fishery has operated from Lizard Island during the past decade and catches suggest substantial variation in the numbers of available fish among years. Analysis of environmental data showed that moon phase, sea temperature, tide and wind all affect catch rates. A general linear model of the data showed that more than half of the variance in the catch rates among years could be explained by assuming that these environmental variables control the numbers of migrating fish.

PHYSICS-BIOLOGY LINKS DETERMINE THE RECRUITMENT OF FISH LARVAE ON CORAL REEFS

The Great Barrier Reef is a vast archipelago containing more than 2,000 discrete coral reefs. Although these reefs are separated by distances of 1-10 kilometres, the spawn released from each reef is dispersed by coastal currents to others. In order to manage reef resources, it is essential to understand the dynamics of this web of larval connections. While computer models of hydrodynamics provide the general basis for understanding these linkages, their predictions can be altered radically if the pelagic larvae have independent behaviour. In the case of coral reef fish, recent studies have shown that larval fish measuring just 1-2cm are capable of sustained swimming and appear able to follow directional cues (perhaps biological noises) to locate reefs that they cannot see. The impact of this behaviour was investigated in a case study for one coral reef, where the distributions and abundance of pelagic juveniles had been sampled extensively along with simultaneous measurements of the flow fields. The model showed that the observed distribution and abundance data was not reproduced when the fish were considered to be passive particles without behaviour. There was much better agreement when the individuals were assumed to swim towards the reef at swimming speeds related to their body size. Under these circumstances, the models predicted different distributions around the reef perimeter for animals of

large, medium and small sizes because the latter were more strongly influenced by the tidal motions. These assumptions will now be incorporated into regional hydrodynamic models to refine our knowledge of interdependencies among different reef populations. A practical application of this knowledge would be giving a high level of protection to source populations that make above average contributions to other reefs in their neighbourhood.

ECOLOGICAL MODELLING SHOWS COMPLEX INTERACTIONS BETWEEN CORALS AND ALGAE ON INSHORE REEFS

At government and community level there is a broad consensus that human impacts should not be allowed to degrade the world heritage values of the Great Barrier Reef. The greatest potential for such impacts arises from land-based threats, such as increases in sediments and nutrients carried by freshwater run-off. One popular scenario predicts that increased nutrient loads will promote the growth of seaweeds, which would displace corals on inshore reefs. New field research, combined with mathematical modelling, has shown that the processes are more complex than assumed by this simple scenario. The work has shown that herbivorous fish are critical in regulating nutrient impacts on seaweeds, while chronic increases in nutrients and sediments may lead to reef degradation by preventing reef recovery after a natural disturbance such as a cyclone or a river flood. The model predicts these changes on the basis of poorly known interactions among ecological processes, which will now become the focus of further measurements in the field.

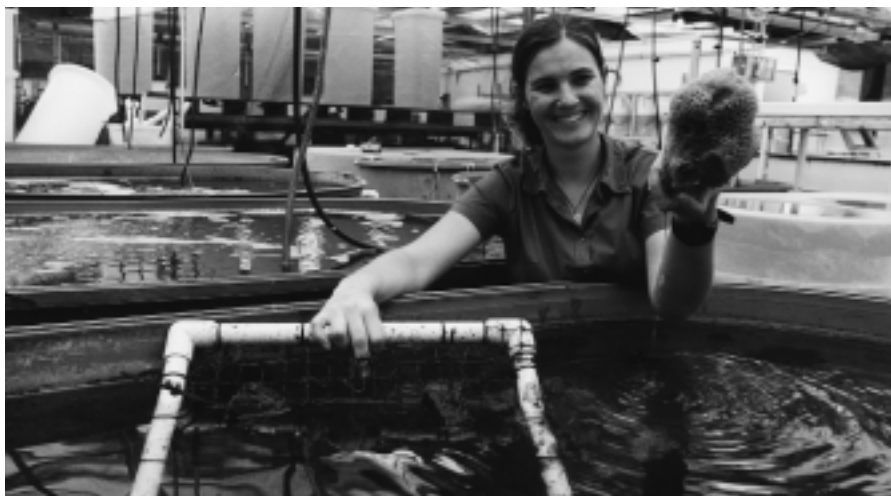
HERBICIDE FROM THE SEA MAY KILL LAND-BASED WEEDS

A research team from AIMS and James Cook University (JCU) is developing a new herbicide based on a natural marine chemical. This new concept in weed killing arose from observations that much of the sea floor is not covered by free growing plants. The team screened a large proportion of the 10,000 samples of marine macrofauna held at AIMS to identify potentially useful active compounds. They discovered that extracts from several animals living on the Great Barrier Reef have the ability to kill plants selectively, at very dilute concentrations. The compounds that the group discovered appear to affect a specific pathway of a group of plants that are dominant in weed species (known as C_4 plants). It is harmless to almost all crop plants (known as C_3 plants), which should allow crops to be sprayed while growing. This is not possible with existing herbicides. Because these compounds have been secreted into the sea for millennia without apparent effect on animals, they are unlikely to be harmful to humans.

THE MICROENVIRONMENT INSIDE A GREAT BARRIER REEF SPONGE

A substance isolated from a common marine sponge, *Rhopaloeides odorabile*, has been shown capable of killing human leukaemia cells but it is not known whether the substance came from the sponge itself or from microbes living in association with it. Ms Nicole Webster, a student enrolled at James Cook University in Townsville who conducted her research at AIMS, completed a study of this problem for her doctoral thesis. Her preliminary findings have established a model for understanding how bacteria and marine invertebrates live together.

Ms Webster observed that a single bacterium dominated the microbial community within the sponge but was absent from the surrounding seawater. This bacterium lives in a symbiotic relationship with the sponge and the active compound appears to be a product of this symbiosis. The symbiont is also a new species, which illustrates the importance of preserving biological diversity and its associated opportunities.



*PhD student Nicole Webster
(Photo courtesy Townsville Bulletin)*

AIMS WEATHER STATION SURVIVES CYCLONE VANCE

Cyclone Vance formed in the Timor Sea and developed into a category 5 cyclone with very destructive winds. It initially moved southwest and then veered south down through Exmouth Gulf causing major destruction to the township of Exmouth, which caught the full force of the cyclone. The maximum wind speed measured by the Bureau of Meteorology station at Learmonth Aerodrome was 267 km per hour at 1150 Western Standard Time on 22 March 2000 – the highest wind speed ever recorded on the Australian mainland. At this time, AIMS had instruments on the land and in the sea near North West Cape recording wind and currents. Although most of the temporary shore-based installations were destroyed, there was no damage to the tower or instruments of the permanent weather established by AIMS at Milyering. This station has been operational since 1996 and monitors the weather for the Ningaloo Reef. Its records for this catastrophic event can be found on the AIMS website (www.aims.gov.au).

UPWELLING DRIVES FOOD-CHAIN DYNAMICS OFF THE NORTH WEST CAPE

Phytoplankton populations in low-nutrient tropical oceanic waters of the Indian Ocean are typically dominated by very small prokaryotes (related to bacteria). A two-year study of plankton communities in Western Australia showed contrasting results between consecutive summers, apparently associated with a reversal in the Southern Oscillation Index. In the El-Niño year, there was a high biomass of large diatoms and productivity values typical of upwelling systems. In the La-Niña year, productivity was low and dominated by tiny cells. These differences were also reflected in the

composition and abundance of zooplankton, which graze upon the algal cells. This multidisciplinary study suggests that regional wind fields and longshore currents, which are affected by global weather patterns, exert a controlling influence on oceanic production along this part of the coast. Planned research will determine how these changes may affect the abundance of higher trophic levels (e.g. fish and prawns).

TROPICAL KRILL MAY FEED WHALE SHARKS IN WESTERN AUSTRALIA

Whale sharks aggregate off Ningaloo Reef from March to June each year and support a growing ecotourism industry. Folklore has it that the sharks are attracted to this area by the mass spawning of reef corals. Intensive sampling of plankton communities has shown that there is another more abundant food source. Hydro-acoustic surveys made in collaboration with Australian Antarctic Division have revealed the presence of large stocks of a small tropical euphausiid *Pseudeuphausia latifrons*. These animals, better known as krill, are keystone species in the food chains of the southern oceans where they are the principal food of baleen whales. It appears that their tropical relatives may serve a similar function for the plankton-feeding whale sharks. The acoustic surveys showed strong mid-water scattering layers extending for 3-4 nautical miles, which were sampled and shown to be krill swarms. These swarms occur in the same places as the whale sharks and researchers will now ask whether the number of whale sharks seen in a season, which vary considerably among years, are a direct reflection of natural cycles in the krill resource.

HUMAN IMPACTS DETECTED IN THE ORD RIVER ESTUARY

In 1999, a cruise was made to both the West and East Arms of the Ord River estuary, Cambridge Gulf, which opens into north Western Australia not far from the border with the Northern Territory. The East Arm drains the Ord River, which has been dammed to provide water to a large-scale irrigation scheme. The West Arm drains the Pentecost and Durack Rivers, which are still largely untouched by human activities. Preliminary measurements show that enormous siltation has occurred throughout the East Arm in the past 50 years, to the point where the estuary has become unnavigable and a strong tidal bore has been created where none was recorded in the journals of the early explorers. In contrast, the bathymetry of the adjoining West Arm has remained almost unchanged over the past 100 years. This shows that human activities in the Ord River catchment have been responsible for significant modification of the lower reaches.

BARRIER REEF RESEARCH MAY IMPROVE INCOMES IN PACIFIC ECONOMIES

AIMS and the International Centre for Living Aquatic Research Management have joined forces in the Solomon Islands to trial a new developmental fishery. Solomon Islanders are being shown how to capture and culture the fry of a wide range of coral reef fishes to supply an international trade in aquarium fishes worth \$A5 billion dollars per annum. Research has shown that most fry perish before colonising reef habitats. Hence this developmental fishery is based on harvesting some of those fry that would be wasted naturally and rearing them to marketable size. The concept is being tested in the Solomon Islands with financial support from the Australian Centre for International Agricultural Research.

REPORT OF OPERATIONS

PART A: COUNCIL'S REVIEW OF OPERATIONS AND FUTURE PROSPECTS

PART B: OPERATIONAL AND FINANCIAL RESULTS

PART C: INSTITUTE STRUCTURE AND GOVERNANCE

CERTIFICATION OF REPORT OF OPERATIONS

The Council of the Australian Institute of Marine Science is responsible under Section 9 of the *Commonwealth Authorities and Companies Act 1997* (CAC Act) for the preparation of the Australian Institute of Marine Science's Annual Report.

Council endorsed the content of the report of operations, which was prepared in accordance with the *Commonwealth Authorities and Companies Orders 1998*, by a resolution of its meeting of 11 September 2000.



A E de Norbury Rogers
Chairman
11 September 2000

REPORT OF OPERATIONS

PART A: COUNCIL'S REVIEW OF OPERATIONS AND FUTURE PROSPECTS

THE NATIONAL CONTEXT

Australia's ocean territory is larger than the Australian landmass. From north to south, the claimable jurisdiction straddles three major climate zones from the tropics to the frozen Antarctic continent. From west to east, it encompasses the eastern Indian Ocean and the western Pacific Ocean as well as intermediate seas (e.g. Arafura, Timor and Coral seas). This vast and diverse expanse contains many valuable resources and opportunities that already contribute around 10 per cent of Australia's GDP and provide needed employment in regional Australia. It contains many more as-yet untapped opportunities and has the potential to make an even greater contribution to society if used wisely. Marine science and technology is the key to capturing that potential through the development of an improved understanding of the nature of the large marine ecosystems that make up Australia's Marine Jurisdiction (AMJ – the Exclusive Economic Zone plus claimable area).

The AMJ is so large, and much of it so remote from land, that it remains mostly unexplored. The Commonwealth Government has provided a national framework for development and wise use of the AMJ through the release of *Australia's Ocean Policy* and *Marine Science and Technology Plan (MS&T Plan)*. The AIMS research program is developed within this framework and supports 20 of the 28 detailed objectives in the *MS&T Plan* across the marine domains of northern Australia (see Appendix 3).

The longer-term nature of the Institute's research and its focus on tropical ecosystems provides a unique contribution to the national effort made in a geographical area of strategic importance (regional and northern Australia). Research output during 1999–2000 has continued to generate scientific knowledge relevant to users of marine research. Transfer of this information to users remains a high priority and this report identifies ongoing success in this effort. This provides output that supports the protection and sustainable development of Australia's marine resources and thereby contributes to the Institute's Outcome under accrual budgeting.

The effectiveness of the Institute's effort is enhanced through collaboration and linkages to users of marine research. In the Review of Marine Research in Tropical Australia, the Chief Scientist, Dr Robin Batterham, assessed how well AIMS was performing against 3 criteria: excellence in scientific output; collaborative arrangements; and connectivity to end users. The report found that AIMS "is

delivering world-class tropical reef research” and “providing the region with a strong research capability to support existing and emerging marine industries, such as tourism, aquaculture, and biomolecular discovery”. The success of collaboration and coordination among marine research and management bodies in the Townsville region was praised by the Chief Scientist and recommended as “a model for replication elsewhere in Australia”.

The Chief Scientist’s report was highly significant for AIMS not only because of the positive response to the Institute’s research and directions but also because it found that Cape Ferguson was “an ideal site for marine research”. In a visit to Townsville following consideration of this report, the Minister for Industry, Science and Resources, Senator The Hon Nick Minchin, reaffirmed the Government’s commitment to refurbish the Institute’s ageing facilities. This investment will assist AIMS scientists to remain at the leading edge of world-class research.

The AIMS Council acknowledges the contribution of Dr Russell Reichelt to the achievement of these outcomes during his period as Director of AIMS.

THE INSTITUTE’S MAJOR OUTCOMES IN 1999–2000

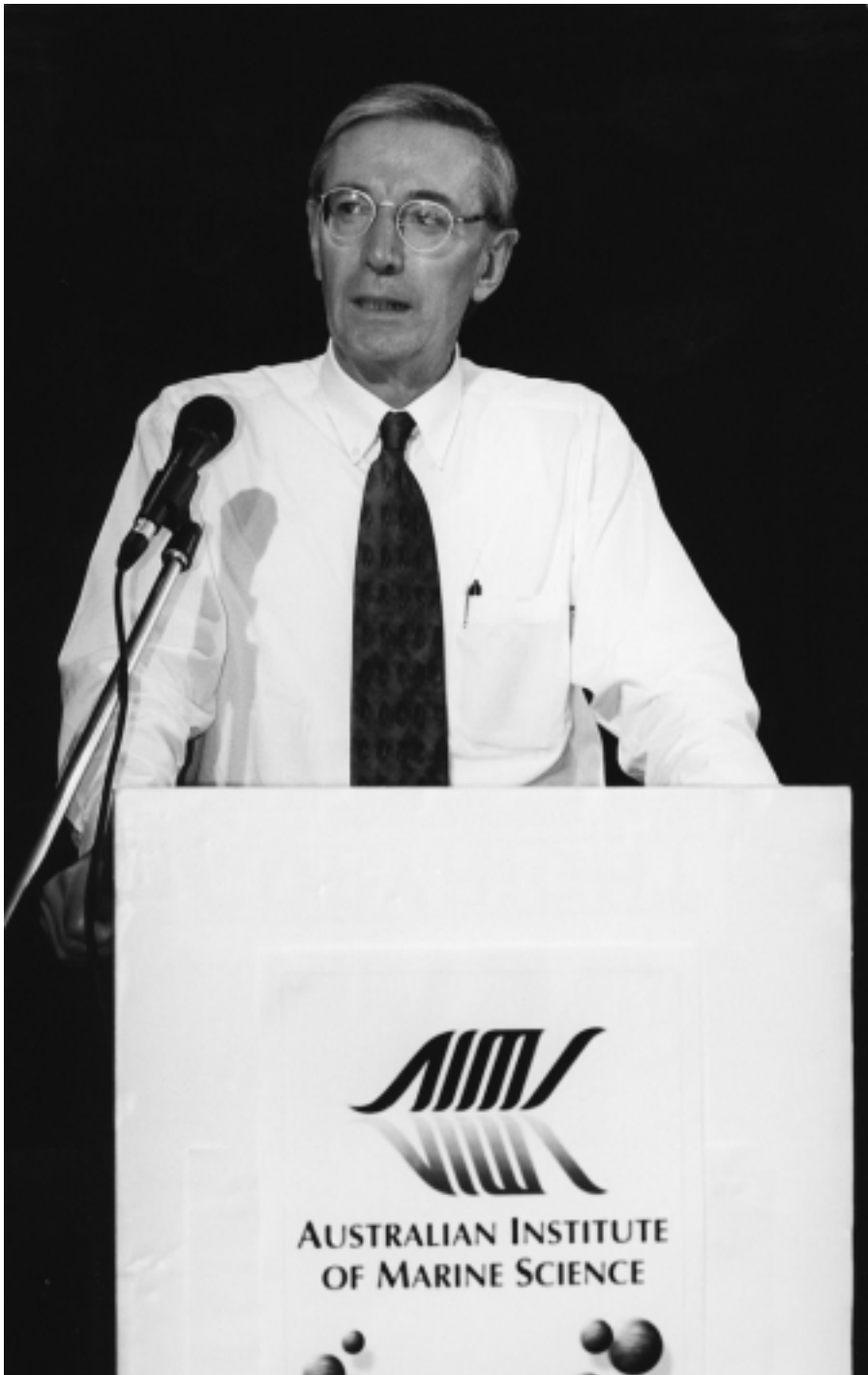
Highlights of the research program are described in the previous section of this report, entitled Marine Science Achievements (p. 9).

In addition to these noteworthy achievements, AIMS scientists have maintained a steady flow of information in support of the protection and sustainable development of Australia’s marine resources. This information was expressed in many ways (see Part B, Report of Operations). Apart from the traditional high quality scientific publications, information was transferred to the Australian public and other users through presentations, community consultations, representation on expert committees, Internet application and media.

The Institute recognises a special obligation to transfer the results of its research to Australian marine industries. During 1999–2000, this support was provided in client reports covering aquaculture, biodiversity surveys and environmental impact assessments. In addition, the second of AIMS’ patented technologies was licensed to industry partners.

FACTORS INFLUENCING AIMS PERFORMANCE

The program to refurbish the Institute’s Cape Ferguson facility was endorsed as an outcome of the Chief Scientist’s Review (see The National Context, p. 21). The outcome of this review was very positive, supporting the directions and activities being pursued by the Institute and continuation of the approved refurbishment program.



*The Minister for Industry, Science and Resources, Senator The Hon Nick Minchin, announced the outcome of the review of marine science infrastructure in the Townsville region on 4 May 2000.
(Photo courtesy Townsville Bulletin)*

PARTICIPATION IN SIGNIFICANT PARTNERSHIPS

The Institute's future prospects were potentially enhanced by several significant collaborative developments in the past year:

- ❑ The Cooperative Research Centre for Ecologically Sustainable Development of the Great Barrier Reef was replaced on 1 July 1999 by a successor: the CRC for the Great Barrier Reef World Heritage Area (also known as CRC Reef Research). AIMS is the largest research provider in the new CRC and senior scientists from the Institute were chosen to lead two of its four research programs: Program C *Maintaining Ecosystem Quality* (Dr Peter Doherty) and Program D *Information, Synthesis and Advice* (Dr Terry Done). This cross-vesting in science leadership ensures that there is great complementarity between the research objectives and resource investments of the CRC Reef Research and the AIMS Science Program. For example, both Programs have projects to understand and conserve marine biodiversity, to assess land-based threats to coastal marine ecosystems, to assess the impacts of climate change on life in the oceans, and to provide decision support to marine resource managers. The CRC is a consortium of research providers, management agencies, public interest groups and industry. It provides close linkages with users of the Institute's reef research and strongly influences the directions of AIMS' research program. AIMS' links with the CRC were further enhanced through the appointment of Dr Russell Reichelt as CEO of the CRC in June 2000. Dr Reichelt had served as AIMS Director for five years until April 2000.
- ❑ AIMS is a significant contributor to the Innovation Technology Advisory Group (ITAG), a collective initiative set up under Townsville Enterprise Ltd to foster and facilitate the development of technology parks and business parks in the Townsville region.
- ❑ AIMS renewed a Memorandum of Understanding with James Cook University to share facilities and to promote collaboration in research. The research skills of staff and postgraduate students from the University augment the research capacity of the Institute. AIMS vessels and advanced analytical facilities strengthen regional capacity for research in northern Australia and expand the opportunities for advanced research training in the region.
- ❑ AIMS and CSIRO Marine (CMR) have further developed joint activities involving some large-scale complex problems: regional marine planning in north Western Australia (North West Shelf Joint Marine Environment Management Study); seabed biodiversity surveys in the Great Barrier Reef World Heritage Area (a project being developed in CRC Reef Research); and downstream effects of agriculture and aquaculture.



AIMS executed a Memorandum of Understanding with James Cook University in January 2000, to build on existing co-operation between them in several significant areas of research. Pictured after the signing are former AIMS Director Dr Russell Reichelt and the Vice Chancellor of JCU, Professor Bernard Moulden.

(Photo courtesy Townsville Bulletin)

PLANS FOR THE FUTURE

July 2000 is the start of the 2000–2003 Triennium and considerable effort was spent during 1999–2000 developing the research program for this next three-year period. The process was conducted within the framework established by *Australia's Ocean Policy* and *Marine Science and Technology Plan*, and involved internal discussions about feasibility and external consultations with a wide group of stakeholders with interests in northern Australia to identify information gaps, update our priorities, and receive reaction to our proposals.

This iterative process has resulted in significant change to the research program. In the next triennium, research will be focused into 5 projects. This structure is seeking to maximise advantage from greater sharing of equipment and research skills. For example, elements of marine biotechnology (aquaculture, bioactive molecule discovery) that were previously distributed in different projects have been united under one umbrella.

Our renewed objectives have been published in the *AIMS Research Plan 2000-03*. As detailed in this document, AIMS will make greater investment in the following areas:

- ❑ Sea-floor biodiversity in response to concerns about prawn trawling within the Great Barrier Reef World Heritage Area. This will involve the development of new tools for probing habitats beyond diving depths. This development will also support the regional marine planning featured in *Australia's Oceans Policy*, which raises a need to know more about the seabed resources in the AMJ.
- ❑ Decision support and data management in response to the challenge of developing effective regional marine plans. This task will be assisted by using data visualisation to present the information in complex multi-layered data sets in user-friendly interfaces. Computer models will be developed to provide tools for scenario evaluation by marine resource managers. More products, including monitoring data, will be distributed over the Internet, providing the public and other users access to information in near to real time.
- ❑ Coral 'bleaching' and regional climate monitoring in response to recent global coral 'bleaching' and the ensuing public debate about possible impacts of climate change in a 'Greenhouse world'. For the corals, the key issue will be their ability to adapt to change. For the climate monitoring, AIMS will refurbish and expand its network of automated weather stations, increase the deployment of underwater instruments, and increase our use of remote sensing tools to understand links between local climate and global patterns.
- ❑ Land-based threats and impacts on coastal marine ecosystems in response to a public debate about water quality in the Great Barrier Reef World Heritage Area. Large-scale studies will measure and monitor dissolved and particulate nutrients being flushed from catchments disturbed by human uses. Powerful new biomarkers will be developed to measure levels of sublethal stress. New

work will be started on the biogeochemistry of land-sea interactions including groundwater discharge. The Long-Term Monitoring Project will increase the level of monitoring on inshore coral reefs.

- ❑ Aquaculture in response to the need to develop sustainable industries for regional northern Australia. The Institute will focus on transferring to industry its research on domestication of prawns and continue work on selective breeding. We will also investigate opportunities for new industries including some non-traditional ones such as sponge aquaculture to produce expensive fine chemicals that cannot be synthesised economically.

NEW RESEARCH VESSEL

On 29 February 2000 the Director signed a contract with Tenix Shipbuilding WA, a Division of Tenix Defence Systems, for the design and construction of a 23.9m research vessel. The vessel, due to be launched in Fremantle in early November 2000, will be a major asset to the Institute’s field operations capability. The Council of the Institute chose the name *RV Cape Ferguson* for the new ship, after the location of the Institute’s major facilities in North Queensland. *RV Cape Ferguson*, which was designed after extensive input from scientific users and marine architectural and engineering advice, will work on a broad range of tasks throughout the Great Barrier Reef around the north of Australian and into waters off the north west coast of Western Australia. She will have a complement of 14, and ability to remain at sea for up to 21 days.

Statistics:

Length overall	23.9m
Beam	7.8m
Draft (maximum)	2.5m
Speed (maximum)	10 knots
Range	2000 nautical miles

RV Cape Ferguson will be operated for the Institute by the Capricorn Barge Company, which currently operates the Institute’s other two major vessels. *RV The Harry Messel*, which has given valuable service to the Institute for many years, will be sold.



REPORT OF OPERATIONS

PART B: OPERATIONAL AND FINANCIAL RESULTS

PRINCIPAL OUTPUT

AIMS produces a wide range of services and products for users of marine research. Selected examples of research outputs have been summarised in a separate section, Marine Science Achievements, before the Council's review of operations (pp. 9-17). Indicators of additional outputs are included below.

MAJOR INVESTING AND FINANCING ACTIVITIES

AIMS has no investing activities other than those related to normal commercial cash management, and no financing activities other than those enabling the Institute's outputs to be produced.

PERFORMANCE INDICATORS

The Institute reports performance against indicators agreed as part of the 1997–2000 Triennium Funding Agreement. The major focus of these indicators is the linkage between AIMS and the users of its research. A description of the indicators is included in Appendix 5.

SHIFT OF RESOURCES TO AGREED PRIORITY AREAS

AIMS' research priorities are determined by the AIMS Council and described in a public document, the *AIMS Research Plan*. This document was updated for 1999–2000, which was the final year of the 1997–2000 triennium.

SCIENTIFIC PUBLICATIONS

	<u>96/97</u>	<u>97/98</u>	<u>98/99</u>	<u>99/00</u>
Journal/book chapters/articles	76	84	86	92
Conference proceedings	35	33	48	17
Technical reports	5	1	9	17
Consultancy reports	25	20	14	10
Books/Monographs	1	3	4	3
Theses	-	-	1	7
Total	142	141	162	146

Published scientific outputs (see Appendix 5) were similar in 1999–2000 to previous years with the exception of Conference Proceedings that fluctuate in response to major meetings. The primary indicator (peer-reviewed publications in

scientific journals) has shown a steady increase over the past four years despite a small reduction in the number of scientific staff employed by the Institute. Postgraduate research theses have been included this year to reflect the importance of student researchers to the AIMS research program.

The collaborative nature of the AIMS research program is reflected in the large number of scientific journal articles (more than half) that were co-authored with scientists from outside the Institute. One quarter of all scientific publications were co-authored with scientists from other countries. Approximately another third were co-authored with scientists from other institutions within Australia.

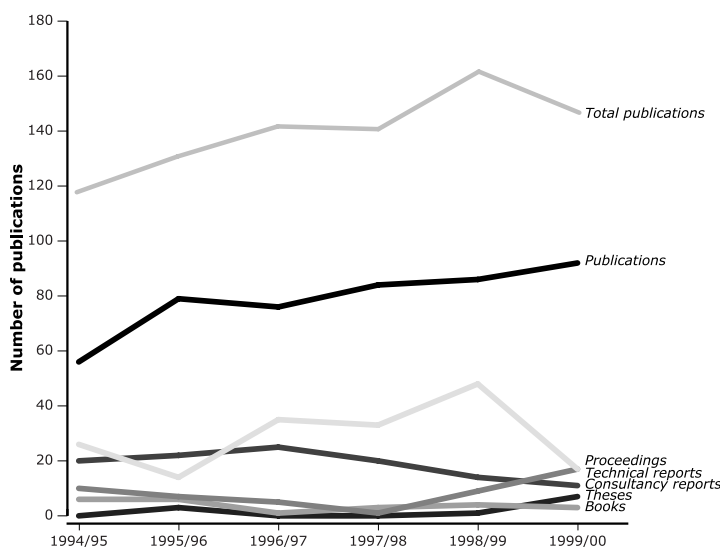


Figure 1: Scientific publications

PATENTS

The Institute currently holds 45 deeded patents relating to ultra-violet blocking sunscreen technology. Nine patents have been granted up to the reporting date on the WetPCT™/KORD™ technologies. The protection of the WetPCT™/KORD™ technologies in the world's major markets is well advanced.

In addition, patent coverage for the “coral bones” technology is currently in the national examination phase in the major market countries.

The last of the UV blocking compound patents was granted during 1999–2000.

SCIENTIFIC RECOGNITION

One measure of the impact of the Institute and its standing in national and global arenas is the recognition given by others to its outputs and/or the prestige of its staff, including distinguished awards. In recognition of their professional standing, AIMS scientists were invited to join or continue as Editorial and/or Board

Members of some of the best international scientific journals, including:

Aquaculture
Continental Shelf Research
Coral Reefs
Estuarine, Coastal and Shelf Science
Fisheries Oceanography
Journal of Coastal Research
Journal of Marine Research
Journal of Marine Systems
Mangroves and Salt Marshes
Marine and Freshwater Research
Marine Ecology Progress Series
Oceanographic Literary Review
Oecologia
UNESCO Encyclopaedia of Life Support Systems
Wetlands Ecology and Management.

Some of the individuals recognised during 1999–2000 were:

❑ AIMS scientist honoured by learned Society

Dr Eric Wolanski has been elected a Fellow of the Australian Academy of Technological Sciences and Engineering (ATSE) in recognition of his achievements in oceanography reported in 222 scientific and technical publications. Dr Wolanski has an international reputation for research in coral reef, coastal and mangrove hydrodynamics, emphasising the dispersal of spawn, sediments and pollutants. In 1994, he was awarded a \$US1 million grant from the IBM International Foundation for computer modelling of environmental processes and he has published many results from this project. He has been appointed to the editorial boards of six international scientific journals and the UNESCO Encyclopaedia of Life Supporting Systems. In 2000, he was appointed Chief Editor of two journals: *Estuarine, Coastal and Shelf Science* and *Wetlands Ecology and Management*.

❑ AIMS scientist assists international efforts to conserve coral reefs

Dr Terry Done has been invited to join a team developing plans for management of the Meso-American Reef System. This system runs for about 600km along the coasts of Mexico, Belize and Honduras. In size, it is second only to the Great Barrier Reef, but the multiple jurisdictions represent greater challenges to balancing wise use with conservation of the resource. In 1999–2000, Dr Done was called upon by three different groups to plan initiatives to conserve the world's coral reefs. His capacity to contribute to these international conservation programs is based upon over 20 years of research at AIMS on coral reefs and his involvement at senior levels in the Cooperative Research Centre for Ecologically Sustainable Development of the Great Barrier Reef. He is also President of the International Society for Reef Studies, which comprises 800 members from 52 countries.

❑ **AIMS scientist tackles water pollution problems in China**

Dr David Klumpp was one of only four researchers from outside China awarded a Visiting Scholarship by China's National Science Foundation. Dr Klumpp will use his 100,000 yuan (approximately \$A50,000) grant to build upon existing collaboration with colleagues at Xiamen University on marine environmental health and protection. It is recognition that China needs to develop strategies for protecting the country's environment in the face of its rapid industrial and economic development. Dr Klumpp has been working with the Environmental Science Department at Xiamen conducting research and training in techniques that provide early warning signals of pollution.

❑ **AIMS scientist informs international debate about access to biodiversity and benefit sharing**

Ms Elizabeth (Libby) Evans-Illidge was invited to the First Commonwealth Science Forum – Access, Bioprospecting, Intellectual Property Rights and Benefit Sharing held in Goa, India, to present the Institute's experience in accessing marine biodiversity and negotiating benefit-sharing arrangements with owners of the resource. Fourteen Commonwealth countries attended, with the AIMS delegate making the only marine contribution. Subsequently, Ms Evans-Illidge presented the AIMS model to the first meeting of the Panel of Experts on Access and Benefit Sharing, Convention on Biological Diversity (CBD), held in Costa Rica, Central America. Attendance at this meeting was by invitation only and Ms Evans-Illidge was selected by the CBD Secretariat from over 300 nominations provided by governments. She was the only member selected from Australia among the panel of 58 international experts.

❑ **AIMS scientist appointed to the CAMBIA Board**

Dr Kate Wilson was appointed to one of three external Directorships on the Board of CAMBIA, the Center for the Application of Molecular Biology to International Agriculture. With degrees from Cambridge and Harvard, and postdoctoral experience in London, Vienna, and the Netherlands, Dr Wilson moved to Australia in 1992 to be one of two founding members of CAMBIA. Today, that organisation is a not-for-profit private research centre that has its own laboratories in Canberra and a research staff of 20-30 persons. Its mission is to develop novel technologies based on molecular biology for use in both developed and developing countries. It has two main research programs: Enabling Technologies, which develops enhanced tools for molecular research applied to agricultural crop plants; and the TransGenomics Initiative, which generates agriculturally useful biodiversity in crop plants. Since Dr Wilson's appointment to AIMS in 1996, she has worked on genetic controls of reproduction in prawns, and on the development of a genetic linkage map for the black tiger prawn.

❑ **Rhodes Scholarship awarded to Honours student to continue her studies in marine science**

Ms Jan Strugnell, an Experimental Scientist in the AIMS Mariculture, Biodiversity and Genetics project and Honours student of James Cook University, was awarded a Rhodes Scholarship to study for her doctorate at Oxford University, England. She is believed to be the first Rhodes scholar in the marine sciences.

CONTRIBUTION TO AUSTRALIA'S FUTURE THROUGH TEACHING AND TRAINING

Six staff were recognised by conjoint or adjunct appointments at universities but many others contributed occasional lectures and seminars. Most scientists supervised postgraduate students (55 during the reporting period) and included them within their research programs. In addition, work experience was offered to a large number of students (high school, undergraduates, postgraduates), either through formal work experience programs or voluntary research positions.

	98/99	99/00
Number of research students supervised by AIMS staff	53	55
Number of completions during the year	-	14
Number of conjoint teaching positions undertaken with universities	6	6

COORDINATION OF RESEARCH AND LINKAGES WITH DECISION-MAKING BODIES

AIMS places a high priority upon developing and maintaining effective relationships with the users of its research outputs. This includes coordination of research through collaboration and research networks, and linkages with decision-making and educational bodies that facilitate the transfer of knowledge.

Collaboration

The Institute has fostered many strategic partnerships. Since 1993, it has been the major research provider in the CRC Reef Research and, following the successful bid for renewal of the Centre, will continue this role until at least 2006. This alliance leverages around 20 per cent of the total scientific effort at AIMS to collaborative research with other government agencies (GBRMPA, QDPI, CSIRO), university (JCU, ANU) and industry (AMPTO, QCFO). During the reporting period, five per cent of AIMS' research effort was committed in a similar manner to the CRC for Aquaculture, although that entity was unsuccessful in its first bid for renewal and may not continue.

AIMS has always sought and maintained working relations with scientists from other Commonwealth Government science organisations (e.g. AGSO, ANSTO, CSIRO). Above all, it has had a special relationship with the CSIRO Marine Research (CMR). In 1999–2000, the senior management teams of both organisations met twice (Brisbane, Townsville) to discuss existing and proposed collaborations. Both meetings affirmed the commitment to coordinate and, where appropriate, collaborate in research. In the next triennium, it seems likely that all of the AIMS research projects will have at least one major collaboration with CMR. Currently, there are 16 active collaborations with scientists from six Divisions of CSIRO, reflecting the multidisciplinary interests of the Institute. Some of these collaborations also include scientists from State government departments in Queensland and Western Australia.

In Western Australia, the State Department of Environment Protection has funded a Joint Marine Environmental Management Study to synthesise available

knowledge and to provide decision support systems for future management of the southern North West Shelf. AIMS is a supporting partner in this study and has agreed to make available its data collected in this region at a cost of about \$10 million since the opening of the Dampier Laboratory. Staff from the AIMS Long-Term Monitoring Project and the WA Department of Conservation and Land Management (CALM) have started joint monitoring of the health of the Ningaloo Reef Tract, which is the second most important reef province in Australia. Another collaboration around Ningaloo and the Exmouth Gulf, between AIMS and the Antarctic Division, has revealed the existence of large unreported stocks of tropical krill (see Marine Science Achievements, p. 17), which may explain the seasonal migrations of whale sharks, manta rays and humpback whales to this region.

In 1999–2000, AIMS completed its immediate objectives for project TROPICS, which is an international multidisciplinary collaboration seeking to understand land-sea interactions along continental margins in the wet and dry tropics (see Marine Science Achievements, p. 14). It continued another collaboration with domestic and international partners formed after the global episode of coral ‘bleaching’ midway through the triennium. The Great Barrier Reef Marine Park Authority has seconded a senior staff member from its Research and Monitoring Section to support a risk-assessment team that will attempt to determine the level of threat posed by possible climate change to the integrity of ecosystems in the Great Barrier Reef World Heritage Area. In 1999–2000, this team integrated the long-term climate monitoring programs of both organisations. Results from a strengthened network of weather stations and underwater temperature loggers have been used to ground-truth satellite observations of sea surface temperatures provided by the US National Atmospheric and Oceanic Administration (NOAA). Data collected as part of this study have shown the need to correct satellite observations for the high water vapour content of the tropical atmosphere. New algorithms have now been developed and are being applied to the data (see Marine Science Achievements, p. 9).

A significant amount of AIMS research was undertaken in Asia and Pacific Ocean island nations through bilateral partnerships sponsored by Australian development funds. Research covered by these arrangements included aquaculture, fisheries, mangrove forestry and rehabilitation and pollution (see “Mangrove ecosystems provide a sink for Greenhouse carbon”, p. 10, and “Barrier Reef research may improve incomes in Pacific economies”, p. 17, in Marine Science Achievements).

Statistics of these collaborations during 1999–2000 were:

Number of national collaborations	81
Number of international collaborations	81
Number of countries providing collaborators	28
Number of countries where collaborations took place	24
Cooperative Research Centres	3

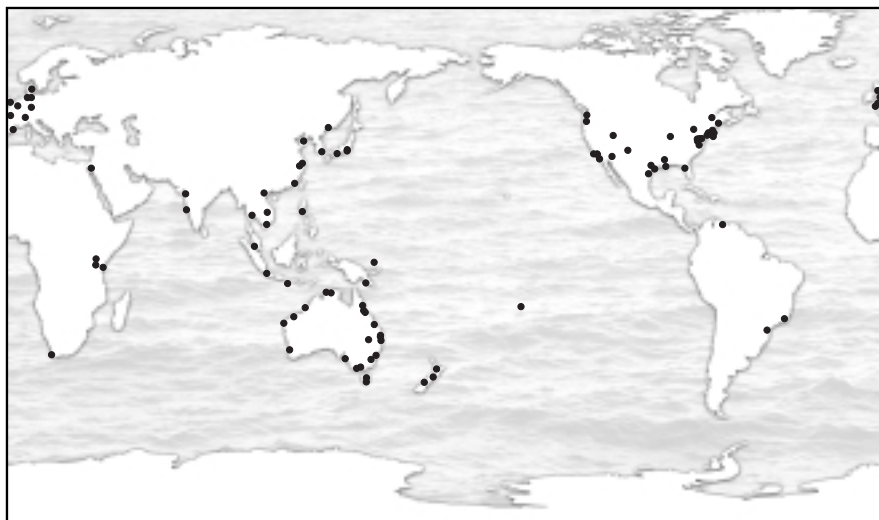


Figure 2: The geographic spread of the Institute's network of collaborators

Many collaborations, especially the large ones, are driven on a practical level by the need to share special resources and/or pool expertise. Examples include the sharing of shiptime by AIMS/CSIRO teams (*RV Lady Basten* and *ORV Franklin*) for coastal and oceanic research, respectively. In Western Australia, the AIMS facility in Dampier has been offered as a support base to staff from the State Museum to make detailed studies of the surrounding environment. AIMS facilities on both coasts provide similar access to coastal marine environments and support for many academics and students, both from Australia and elsewhere.

Input to Policy-making and Implementation

AIMS staff served on a number of expert committees set up to advise government agencies and/or regulatory authorities. Commonwealth examples include representation by Dr Russell Reichelt (Director) on senior level steering committees for the implementation of *Australia's Oceans Policy*. Ms Libby Evans-Illidge was a member of the expert reference group advising the National Inquiry into Access to Biological Resources in Commonwealth Areas and participated in an Inter-Departmental Committee (IDC) formulating Commonwealth policy on access to biodiversity and benefit sharing. AIMS staff also participated in state Government activities, including the declaration of marine protected areas in Western Australian and the formulation of management plans for a number of Queensland fisheries.

In addition to statutory representation on a number of committees (e.g. Heads of Marine Agencies, Coordination Committee on Science and Technology, Marine Science Advisory Group), the AIMS Director served as the independent Chair of the Fisheries Research and Development Corporation and the National Oceans Advisory Group (NOAG), and the Steering Group for the Commonwealth's State of the Environment Report.

Individual scientists contributed to policy formulation in Australia and elsewhere through membership of government committees and influential NGOs, as summarised in Appendix 7.

Use of Scientific Advice

As shown in Appendix 7, AIMS staff participated in a diverse range of external committees where their inclusion was based upon the ability to provide high-quality scientific advice. Examples included advice on the design and location of marine protected areas, the management of exploited marine resources, the impacts of climate change upon marine systems and the management of human use within coastal catchments including the environmental impacts of coastal aquaculture.

During 1999–2000, AIMS assisted the Australian Senate Inquiry into Greenhouse Warming with written and oral evidence. The leader of AIMS' mariculture project was adviser to the Tropical Marine Mollusc Program of DANIDA (Danish Overseas Aid Program). The manager of AIMS' remote sensing facility participated in the Australian Along Track Scanning Radiometer Science Advisory Group, which advised the European Space Agency on its planned ENVISAT mission. AIMS' Long-Term Monitoring Program provided advice to the Great Barrier Reef Marine Park Authority on the status of coral reefs, outbreaks of the crown-of-thorns starfish, coral 'bleaching', and cyclone impacts. AIMS scientists collectively made a major contribution to GBRMPA's Representative Areas Program, which resulted in the recognition of 32 different bioregions within the World Heritage Area. This input was based on at least 200 person-years of observations of the Great Barrier Reef collected over 25 years and was the largest and most diverse source of information available to the Authority.

ADOPTION OF PRACTICES, INSTRUMENTS AND PROCESSES

The effectiveness of the Institute's transfer of technology to users is evident from the wide range of products adopted by users. Examples for the reporting period are:

- ❑ Dr Clive Wilkinson, a Principal Research Scientist, holds the position of Coordinator of the Global Coral Reef Monitoring Network. GCRMN is an international project (with a UNESCO parent) that seeks to establish the status of all coral reefs in the world. It draws upon expertise within the Institute on reef monitoring, data analysis and reporting to assist all countries with coral reefs to establish local monitoring networks. When fully operational in 2001, 80 countries will report through 15 Regional Nodes to the GCRMN Coordinator, who will condense this information into biannual reports on the status of the world's coral reefs. This global study will be based upon monitoring protocols established by the Institute.
- ❑ Monitoring protocols developed for the Great Barrier Reef have been applied to the Ningaloo Reef Tract of Western Australia, Australia's second largest reef province and the world's largest fringing reef.
- ❑ A large database of knowledge about currents, habitats, plant and animal communities collected during the Institute's 25 years of study of the Great

Barrier Reef was assimilated by GBRMPA's Representative Areas Program. These data have been stored and manipulated in large public geographical information systems that are guiding the selection of candidate sites for a network of marine protected areas that will conserve the diversity of the World Heritage Area.

- ☐ Scientific knowledge about the dynamics of corals and reef fish populations are being translated into draft management plans for the sustainable development of several fisheries in Queensland.
- ☐ A national review of research on fisheries habitats in Australia commissioned by the Fisheries Research and Development Corporation is used by the Corporation to determine its priorities for investment in ecosystems research.
- ☐ Scientific results about fish ecology are being used to evaluate the potential for a new artisanal fishery based upon the capture and culture of reef fish fry for the global aquarium trade in the Solomon Islands, supported by ACIAR.
- ☐ Experimental data on the effects of oil, oil dispersants, and remediation techniques have been assimilated into national disaster response plans.
- ☐ Information and advice was transferred directly to industry clients through consultancies into aspects of fisheries, mining, petroleum, and tourism.
- ☐ During the reporting period, AIMS transferred two of its licenced technologies to Australian industry (see below).

Presentations

During the year AIMS scientists made more than 120 formal presentations of their work to diverse audiences, including industry bodies, environmental agencies, scientific conferences, workshops, schools and community groups. Keynote addresses were given to 13 major international conferences.

Status Reports

AIMS has a research team dedicated to monitoring that reports the status and trends in corals, fish and crown-of-thorns starfish over much of the Great Barrier Reef. This information is made available to a wide audience through AIMS' web site (www.aims.gov.au/reef-monitoring). This site is now being updated within weeks of new surveys being completed, providing users with almost real-time access to conditions within the Marine Park.

Community Involvement

In Western Australia, resident staff have provided support to the local Pilbara schools participating in coastal environment programs. In North Queensland, community groups were assisted with applications for NHT funding to monitor changes on inshore reefs of significance to local communities. If the funding is provided, AIMS will train and supervise volunteers to ensure quality control of the studies. Other indicators of community outreach are:

- ☐ 68 guided tours through AIMS explaining marine science to the public. These tours were conducted by a dedicated and enthusiastic group of volunteers, who are given appropriate training upon joining the Institute.

- ❑ Staffed displays illustrating AIMS' research to the public, such as the Great Australian Science Show in Melbourne during Science Week 2000 and the JCU Courses and Careers Day.
- ❑ Participation in North Queensland Science Week activities in May 2000, raising community awareness of the region's scientific research activity.
- ❑ Numerous metropolitan, state and local media (radio, TV, newspaper) interviews and visits by international journalists and film crews.

EXTERNAL EARNINGS

AIMS obtained \$4.62 million in external funds during the year, 16 per cent of the total budget. The drop in percentage from previous years is due to the inclusion in appropriation of asset replacement (\$1.44m) and capital refurbishment monies (\$2.99m), and the capital use charge (\$3.8m) which is received as appropriation revenue and repaid to the Government. A comparison of operating budget (net of these items) shows a slight decrease from last year (23 per cent in 1998–99) to 22 per cent. This decrease was due to a \$0.27 million decrease in external funding and a \$0.20 million increase in the operating base.

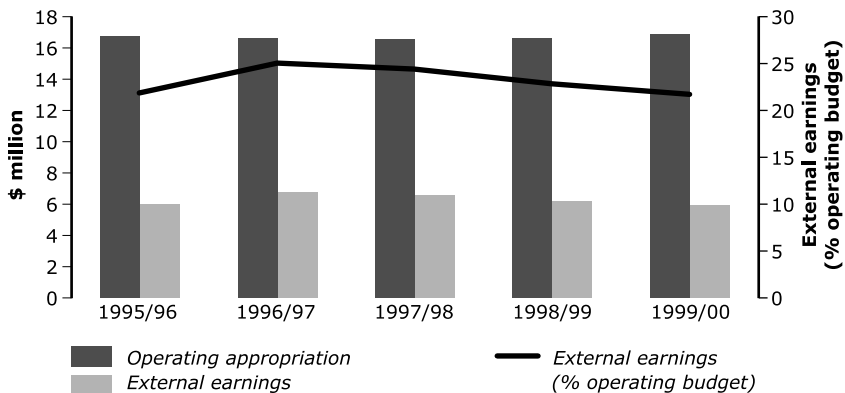


Figure 3: External earnings expressed as a percentage of operating budget

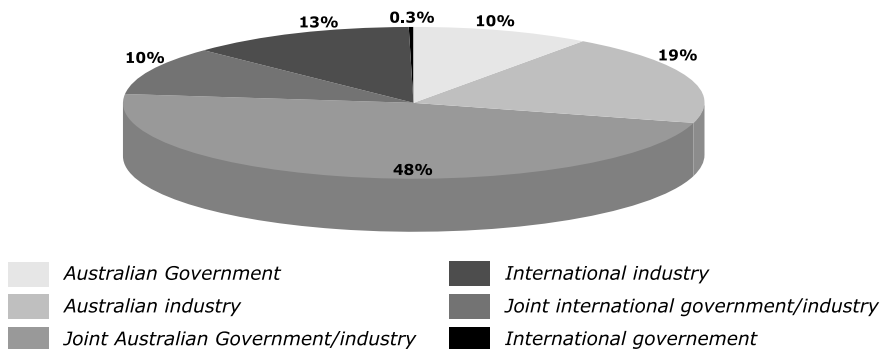


Figure 4: External earnings sources 1999-2000

AIMS is in receipt of royalties arising from the licensing of its patented technologies. WetPC Pty Ltd pays royalties on sales of the products of WetPCTM and KORDTM technologies to industry clients.

JOINT VENTURES AND STRATEGIC ALLIANCES

- ❑ A listed Australian technology company, Nautronix Pty Ltd, has gained a sub-licence from WetPC Pty Ltd for the use of the WetPCTM and KordTM technologies in underwater applications.
- ❑ In August 1999, AIMS licensed the use of the IC855 patented UV-blocking sunscreen compounds to a Sydney technology company Sunscreen Technologies Pty Ltd.
- ❑ On 12 January 2000, AIMS signed a collaborative research agreement with Fuchs Australia Pty Ltd to investigate the biodegradability of vegetable-based lubricants in the marine environment.
- ❑ With partners from James Cook University, AIMS continued to develop compounds that have useful herbicidal activity sourced from a marine organism.



AIMS scientist Dr Andrew Negri is involved with collaborative research with Fuchs Australia, investigating the biodegradability of vegetable-based lubricants in the marine environment.

(Photo courtesy Townsville Bulletin)

Spin-off Businesses

No spinoff businesses were initiated during the reporting period.

Customer Satisfaction

Twenty-two contracts (including grants and consultancies) for AIMS' scientific research services were registered by AIMS during the reporting period. A total of 56 reports (1998–99: 41 reports) were due to be completed during the reporting period as a result of AIMS' externally-funded research or scientific services. All were completed within the reporting period, although several reports had agreed extensions to submission dates.

A substantial proportion of these were performed with and on behalf of clients who have funded AIMS' research in the past.

SIGNIFICANT CHANGES IN PRINCIPAL ACTIVITIES

During the year, a significant research project funded by Kansai Electric Power Company of Japan was finalised in Thailand.

DEVELOPMENTS SINCE THE END OF THE FINANCIAL YEAR

Since the end of the financial year there have been some important developments in the transfer of AIMS technologies into research and commercial partnerships. These will, when carried through to completion, provide an income stream in coming years.

On 26 July 2000 AIMS signed a Deed of Agreement with the Queensland Government that will give the State tangible and diverse benefits from AIMS biodiscovery research that uses Queensland's marine biological resources. The agreement, signed by State Premier Peter Beattie and AIMS Acting Director Dr John Bell, will also end the commercial uncertainty that has hampered biodiscovery in the past and will pave the way for Queensland's natural resources to form the basis of useful compounds such as therapeutic drugs. It covers biodiscovery research on plants, animals and micro-organisms collected from the seabed in Queensland's marine jurisdiction, allowing for their specialised chemicals and other attributes to be copied for use in commercial products. It is expected that this will lead to investment in the outcomes of research by companies that had in the past been wary of entering into agreements without legal certainty.

The agreement deals only with benefit sharing and does not in itself provide permission to access Queensland marine resources for collections. Access will remain subject to existing permitting legislation and appropriate environmental scrutiny.

Negotiations to develop a new Certified Agreement were completed in July. The Australian Industrial Relations Commission certified the Australian Institute of Marine Science Agreement 2000-2001 on Tuesday 15 August 2000.

REPORT OF OPERATIONS

PART C: INSTITUTE STRUCTURE AND GOVERNANCE

ENABLING LEGISLATION AND RESPONSIBLE MINISTER

The Australian Institute of Marine Science (AIMS) is a Commonwealth Statutory Authority established by the *Australian Institute of Marine Science Act* of 1972. AIMS reports to the Minister for Industry, Science and Resources, Senator The Hon Nick Minchin.

The functions of the Institute are to carry out research and development in relation to marine science and marine technology and to encourage and facilitate its application and use. These functions are defined in the AIMS Act (see Appendix 2, pp. 89-90).

MINISTERIAL DIRECTIONS

During the reporting period, the Minister approved or directed the following in accordance with the *Australian Institute of Marine Science Act* (1972):

1. Entry into five contracts for expenditure of more than \$100,000 in any single contract (S. 42)
2. The transfer of AIMS technology under licence (S. 48(1)) in one instance.

INSTITUTE STRUCTURE

COUNCIL

AIMS has a Council of six members including the Director. Members of the Council are appointed by the Governor-General on such terms and conditions as the Governor-General determines. The Director is appointed by the Governor-General on the recommendation of the Council. The terms and conditions of the Director are also determined by the Governor-General.

The Council members holding office at 30 June 2000 were as follows:

Mr A E de Norbury Rogers BCom, AAUQ, FCA, FAICD

Chairman

Term 30/7/1998 – 30/6/2003

Mr Norbury Rogers is a Chartered Accountant and Company Director and is a Senior Consultant to Ernst and Young, having spent many years as a Managing Partner and Senior Partner in Ernst and Young (and its predecessors).

He holds a number of directorships. He is Chairman of Golden Casket Lottery Corporation Limited, Global Seafood Limited and UniQuest Limited and is a member of the Boards of CSIRO and Business Management Limited. He has been a long-standing, active member and office bearer of the Institute of Chartered Accountants.

He serves in a number of positions in the public interest, such as a member of the Senate of the University of Queensland and is Chairman of the Australian Olympic Games Team Fund Appeal Committee (Brisbane).

Dr Wendy Craik BSc (Hons), PhD, Grad Dip M'ment, FTSE, FAICD

Term 1/7/1997 - 30/6/2004

Dr Wendy Craik is the Executive Director of the National Farmers' Federation. A fisheries biologist, Dr Craik previously worked for the Great Barrier Reef Marine Park Authority for 17 years, the last three as the Executive Officer responsible to the Chair of the Authority. Dr Craik was responsible for coordinating the development and implementation of the 25 Year Strategic Plan for the Great Barrier Reef World Heritage Area.

Dr Craik has extensive experience in public policy, environmental planning, management and research, financial and human resource management. She is a member of the Australian Information Economy Advisory Council and the Board of the Institute of Land and Food Resources at Melbourne University.

Mr Bruce G McKay BSc (Hons), FIEAust, FAICD

Term 1/7/1997 - 30/6/2002

Mr Bruce McKay is a geologist with more than 30 years' experience in exploration, production and management in the resources industry, primarily oil and gas.

He worked for Esso Australia and internationally with Exxon affiliates from 1968 to 1992. He is an Honorary Life Member of the Australian Petroleum Production and Exploration Association (APPEA) and was its Chairman in 1991-92. He was Chief Executive of the Australian Graduate School of Engineering Innovation from 1994 to 1997. He is a Non-Executive Director of Normandy Mining Limited and the Non-Executive Chairman of Australian Worldwide Exploration Ltd. Mr McKay is also an adjunct lecturer at the Macquarie University Graduate School of Management and a member of the Management Board of the School of Petroleum Engineering and Management at the University of Adelaide.

Mr Brian Guthrie BEng, BEcon, MEng

Term 30/7/1998 - 30/6/2003

Mr Brian Guthrie commenced his working career at the Townsville City Council as an assistant Engineer and gained experience in all facets of Local Government engineering.

His last 10 years with the Council were spent as Works Engineer. Mr Guthrie then moved into private enterprise with a major subsidiary of Brambles Pty Ltd and held the position of National Manager for Government Services.

He moved to the position of General Manager for the Townsville Thuringowa Water Supply Board, a position he held until taking up the appointment as Deputy Town Clerk and Director Corporate Services with the Townsville City Council. For the past six years he has held the position of Chief Executive Officer with the Townsville City Council.

He has extensive experience at Senior Executive level in government and private enterprise and is the holder of Degrees in Engineering and Economics, and a Masters Degree in Systems.

Professor Merilyn Sleigh BSc(Hons), PhD, Dip Corp M'ment, FTSE, MAICD

Term 30/7/1988 – 30/6/2003

Professor Merilyn Sleigh is Dean of the Faculty of Life Sciences at the University of New South Wales, where she has management responsibility for teaching and research activities across a range of health and environmental science areas.

She is a member of the Boards of two CRCs (Food Industry Innovation and Biopharmaceuticals Research) and a member of the Boards of Food Science Australia (a joint venture between CSIRO and the Victorian Government) and Unisearch Pty Ltd, the technology commercialisation company of the University of New South Wales.

Prior to joining UNSW in 1997, Professor Sleigh was R&D Director for Peptech Limited, a small listed pharmaceutical company. Until 1993, she worked with CSIRO as a research scientist and manager in the area of biotechnology.

Dr Russell Reichelt BSc(Hons), PhD, FAICD

Director

Term 17/1/1995 - 9/5/2000

Dr Russell Reichelt is a marine ecologist with experience in coral reef ecology, ecological simulation and remote sensing. He is presently Chairman of the Board of the Fisheries Research and Development Corporation and adjunct Professor of Biological Sciences at James Cook University and the University of Queensland. Dr Reichelt is interested in the application of science and technology for the benefit of the community, industry and public policy decision-makers. Before appointment as AIMS Director in 1995, he was Director of the Fisheries Resources Branch of the Bureau of Resource Sciences, Canberra. From 1980 to 1989 he was a marine ecologist at the Australian Institute of Marine Science conducting research on the Great Barrier Reef. Dr Reichelt resigned from the position as Director of the Institute on 9/5/2000 to become CEO of CRC Reef Research

Dr John D Bell BSc, MSc, PhD, FTSE, FRACI, Comp I E Aust

Acting Director

Term 22/4/2000 - 21/10/2000

Dr John Bell's career developed from research in structural chemistry and biology, to serving as Deputy Secretary and Chief Science Adviser with the (now) Department of Industry, Science and Resources.

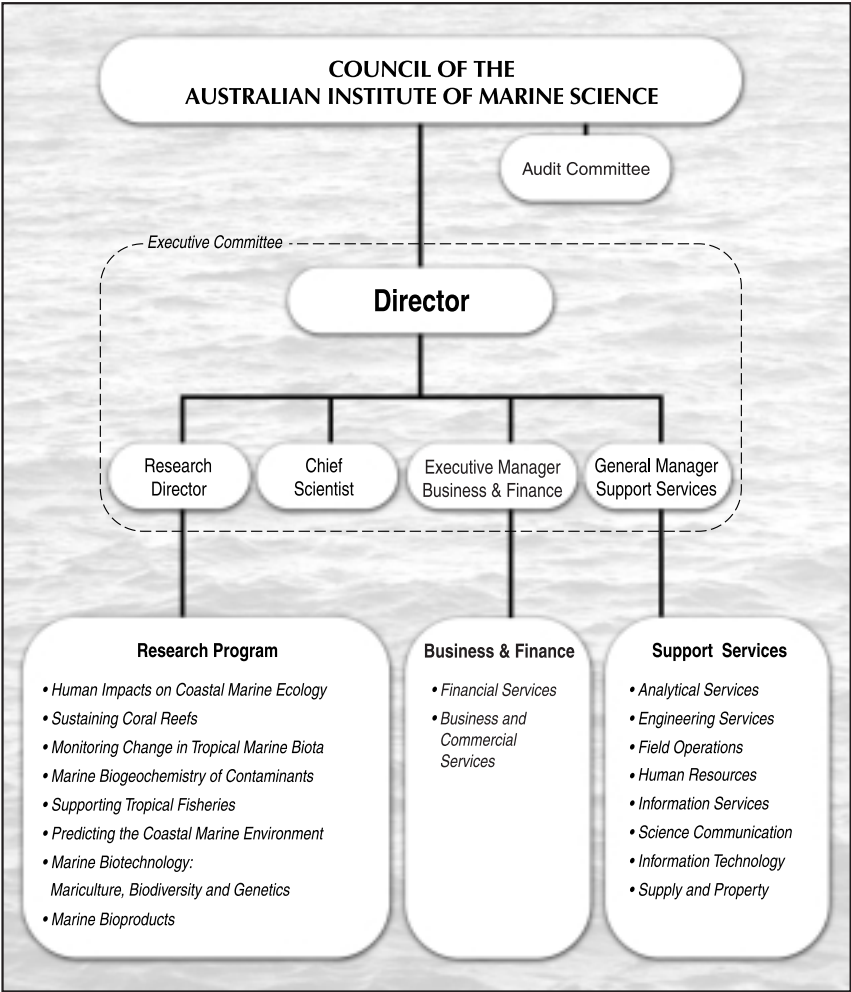


Figure 5: The organisational structure of the Institute

He has wide experience in public sector management and policy formulation and has provided advice to governments on a wide range of scientific and technical issues. Dr Bell spent seven years in Paris working with and for the Organisation for Economic Cooperation and Development. He is a member of the Industry Research and Development Board, the Australian Research Council, the Science Prizes Committee and the ACT Science and Technology Council. He is a Director of the Australian Science Festival Ltd and previously served as a Director of the Australian Technology Group Ltd, and Managing Director of ANUTECH Pty Ltd. His previous appointments include Chair of the Government's Coordination Committee on Science and Technology, the Cooperative Research Centres Committee and the Oil Industry Forum. He has also led delegations to major international meetings.

Council Meetings

The Institute's Council meets four times per year. Members disclose to the Council their connections to other commercial entities, such as Boards, and adhere to a policy on declaring actual or potential conflicts of interest as part of the Council operations.

Council meetings are normally attended by the Institute's Executive Committee to provide advice and consultation. The Council met on the following dates during the 1999–2000 reporting year (attendance is recorded below):

Council meeting number 136	13-14 September 1999	Townsville
Council meeting number 137	22 November 1999	Townsville
Council meeting number 138	13-14 March 2000	Townsville
Council meeting number 139	26-29 June 2000	Dampier

	#136	#137	#138	#139
Mr Norbury Rogers	✓	✓	✓	✓
Dr Wendy Craik	✓	✓	✓	✓
Mr Bruce McKay	✓	✓	✓	✓
Mr Brian Guthrie	✓	✓	X	✓
Professor Marilyn Sleigh	X	✓	✓	✓
Dr Russell Reichelt (<i>ex-officio</i>)	✓	✓	✓	—
Dr John Bell (Acting Director, <i>ex-officio</i>)	—	—	—	✓

AUDIT COMMITTEE

The Council has an Audit Committee comprising two Council members and one independent member, which oversees the Institute's audit strategy and reviews and reports to the Council in connection with the Institute's accounting records. The committee comprises Mr Bruce McKay (Committee Chair, Council Member), Mr Norbury Rogers (Council Member), and Mr Ian Jessup (Independent External Representative, CE Smith & Co). Mr Vic Bayer (AIMS Finance Manager) is Secretary to the Committee. The Audit Committee's operation is consistent with the Australian National Audit Office *Better Practice Guide*, July 1997.

Audit Committee Meetings

During 1999–2000 the Council's Audit Committee held meetings as follows:

31 August 1999	Brisbane
29 February 2000	Brisbane
15 June 2000	Townsville

	August 1999	February 2000	June 2000
Mr Bruce McKay	✓	✓	✓
Mr Norbury Rogers	✓	✓	✓
Mr Ian Jessup	✓	X	✓

EXECUTIVE COMMITTEE

The Executive Committee has five members including the Director who chairs the Committee. During 1999–2000 the Executive Committee included: Dr Peter Isdale, Executive Manager (Business and Finance); Dr Peter Doherty, Research Director; Dr John Veron, Chief Scientist; and Mr Peter Willers, General Manager, Support Services. During the reporting period Dr Veron's efforts were focused on the production of a major research publication (*Corals of the World*) to be released late in 2000.

STAFF

All Institute staff members are employed under the *Australian Institute of Marine Science Act* (1972). In addition to staff paid from appropriation funds, the Institute employs staff periodically on various projects and schemes that are funded from external sources.

The total staff employed by AIMS during the 1999–2000 reporting period (including casuals) was an equivalent full-time value (i.e. staff years) of 159.7 (compared with 162.4 for 1998–1999). Since 1995–96 staff numbers have reduced by 13.7 per cent.

LOCATION OF FACILITIES AND MAJOR ACTIVITIES

The Institute's major laboratory is just outside Townsville. A small laboratory in Dampier supports research in the north west of Australia (see Figure 6, p. 46).

CORPORATE GOVERNANCE

STRUCTURES

The Australian Institute of Marine Science is a Commonwealth Statutory Authority, formed by the *Australian Institute of Marine Science Act* (1972) (the AIMS Act). It is subject to the *Commonwealth Authorities and Companies Act* 1997 (known as the CAC Act), reporting to the Minister for Industry, Science and Resources, Senator The Hon Nick Minchin.

AIMS' mission, planned outcome and output, and strategies related to the achievement of these, originate in the AIMS Act. Its strategic priorities are determined by the Council, and by the decisions of Government.

The AIMS Council is appointed in accordance with section 12 of the AIMS Act, and is responsible for the overall direction and operation of the Institute. It is committed to the principle of applying the results of the Institute's research for the benefit of the community and of Australian industry and commerce, and to assist the Government in making informed management decisions concerning coastal and marine resources and activities.

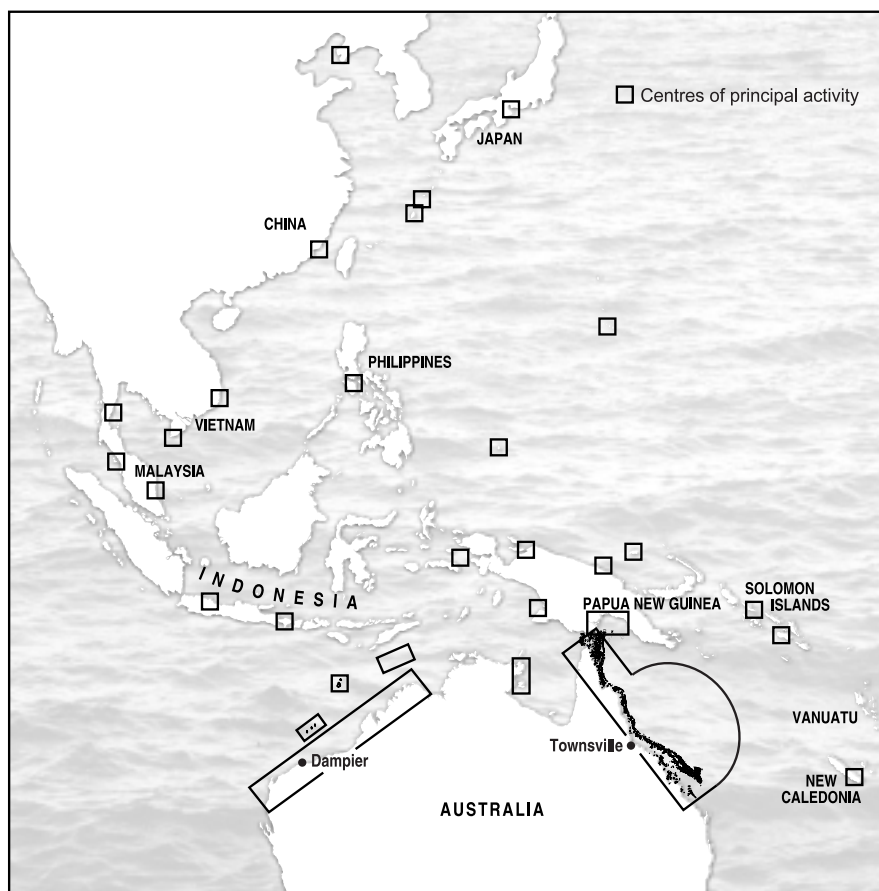


Figure 6: Facilities and major activities

The Council ensures effective management through the Director who manages the affairs of the Institute and provides leadership to staff.

An audit committee provides advice to the Council in relation to the Institute's finances.

PROCESSES

The Council oversees the running of the Institute. It governs the Institute by setting policy, providing review, advice and direction to Institute management (the Director and Executive Committee). The Council also ensures that its finances are audited each year. Ernst and Young conducts an internal audit four times a year, and the Australian National Audit Office conducts an annual external audit.

All members of Council and staff undergo a comprehensive induction process. For the Council, this includes a briefing on the requirements of the CAC Act.

CONTROLS

Council Members' Interests

The Institute's policy on the interests of members of Council is that members must disclose an interest whenever he or she considers that there is a potential conflict of interest. The policy is consistent with the CAC Act (section 21).

In keeping with this Act and Institute policy, a Council member who considers that he or she has a material personal interest (direct pecuniary or indirect pecuniary) in a matter to be discussed by the Council is to declare the existence and the nature of the interest, and is to leave the meeting.

The Council decides when to invite the absent Council Member back to the meeting. In the case of Council Members with a direct pecuniary interest this is not until discussion on the matter is completed.

The policy also applies to all members of staff.

Fraud Control

The Institute has a comprehensive fraud control plan that complies with the *Fraud Control Policy of the Commonwealth – Best Practice Guide for Fraud Control*. The plan is integrated into the Institute's management system and internal audit process. It is reviewed and updated annually by the Finance and Audit Committee to ensure it remains relevant to the Institute's business.

No incidence of fraud was detected during 1999–2000.

Indemnities and Insurance Premiums for Officers

There are no known liabilities to any current or former officers. During the reporting period, no premium has been paid, or has been agreed to be paid, against a current or former officer's liability for legal costs.

AIMS pays premiums for the Directors and Officers Insurances required under the CAC Act.

Use of Sub-contractors

A sub-contractor is a person or organisation engaged by AIMS to provide a service or product that impacts on the Institute's delivery of its products.

The Institute's policy is to base the selection of sub-contractors on quality, value for money and availability when needed, not necessarily on price.

When the purchase value exceeds \$30,000 tenders will be invited either publicly or selectively or as the Tender Board determines. Where there is a benefit to the Institute, selective tendering may be approved by the Director. The Tender Board must approve any exemption from public tendering in writing.

Purchases between \$2,000 and \$30,000 will be through selective tender requiring at least three quotations unless the delegated officer determines that

the request for quotations is impracticable. The reasons for such a decision must be made in writing.

Purchases of less than \$2,000 are considered routine and the calling of quotations is optional.

Consistent with section 21 of the CAC Act, if a purchase involves the consideration of a member of council or staff member, or an immediate family member of either, the member of Council (see Council Member's interests) or staff member is not to be involved in decision-making relating to the purchase.

BEHAVIOUR

The Council requires the Director to extend his or her commitment to good corporate governance – by example and by direction – to all functions of the Institute. The Institute's commitment to best practice is incorporated in its Strategic Directions document that recognises the importance of the Institute's staff to the fulfilment of the Institute's mission. Consequently the highest level of staff satisfaction, health and safety must be maintained.

Code of Conduct

AIMS has a Code of Conduct to which the Council, Director and staff are required to adhere. The Code complies with Division 4 of the CAC Act and includes relevant sections of the Terms and Conditions of Service for staff. New Council members and staff are briefed on the Code during induction training.

JUDICIAL DECISIONS AND REVIEWS BY OUTSIDE BODIES

None.

POLICY AND ADMINISTRATION

EFFICIENCY GAINS

The Institute continues to strive to improve productivity by minimising administrative details and processes. This year has seen further development of the Institute's Intranet and the implementation of additional electronic forms and management systems, which have resulted in worthwhile staff time savings.

SOCIAL JUSTICE AND EQUITY

AIMS has a policy of equal employment opportunity. Staff are recruited and promoted on a merit-based system. The following table shows a breakdown of staff gender and funding source.

Appropriation-funded Staff	Female	Male	Total
Science	21.2	60.1	81.3
Corporate	12.1	8.1	20.2
Support	10.8	28.9	39.7
TOTAL	44.1	97.1	141.2
Externally-funded Staff	Female	Male	Total
Science	11.0	5.9	16.9
Corporate	0.0	0.0	0.0
Support	1.6	0.0	1.6
TOTAL	12.6	5.9	18.5
Total Staff	Female	Male	Total
	56.7	103.0	159.7

The majority of the policy objectives of the AIMS Equal Employment Opportunity (EEO) Plan have been met this year, as illustrated in the following table:

	Expected	Actual 1999-2000
Aboriginal and Torres Strait Islander	2%	1%
Non-English speaking background	10%	19%
Staff with a disability	6%	7%
Women	35%	36%

Nine per cent of the workforce worked part-time, more than doubling last year's figure. The Institute had no reported cases of harassment.

Scientific visitors from over 30 countries worked at AIMS during the year.

STAFF CONSULTATION

The Joint Consultative Committee met six times during the year for discussion and consultation between management and staff representatives.

The consultative process with staff is also enhanced by making available all minutes of internal management committee meetings. In addition, regular staff meetings are held and intranet bulletins issued where the Director advises staff of organisational and scientific issues.

Negotiations took place during the year to formulate the Institute's new Certified Agreement for a 1-year period from 2000 to 2001.

OCCUPATIONAL HEALTH, SAFETY AND THE ENVIRONMENT (OHS&E)

The Institute is committed to the principles of OHS&E and has had an OH&S Agreement in place since 1994. During the year a full-time OHS&E Officer was appointed to review and coordinate the Institute's health, safety and environmental management programs.

During the year the Institute adopted a strategic approach to Occupational Health, Safety and the Environment with the development of an OHS&E Strategic Plan to assist the Institute to meet its duty of care. The Plan was endorsed by the OHS&E Committee at its quarterly meeting in September. The Committee met 4 times during the year and examined a number of OH&S issues. Thirty-two incidents were reported during the year, with four of these resulting in time loss from the workplace. Council and the Executive review OHS&E performance issues at each Council meeting.

No formal investigations were conducted by Comcare under the *Occupational Health and Safety Act*. No provisional improvement notices were issued by Health and Safety Representatives, nor were any notices issued by Comcare under Section 45, 46 or 47 of the OH&S Act.

Ten staff, contractors, students etc and a further 73 visitors attended general OHS&E induction courses throughout the year. 124 people attended OHS&E related training including first aid, CPR and oxygen resuscitation, fire extinguisher training, dive rescue and radiation safety.

An Environment Management Plan was incorporated into the design process for a new salt water pump station and a similar plan is being considered in the design process for the new science wing at Cape Ferguson.

The Institute's employee assistance providers, Interlock, reported a slight reduction in counselling activities for the year. Interlock's services were utilised by 7 per cent of staff, against 7.5 per cent for 1998–99 and 8.5 per cent for the preceding year.

FREEDOM OF INFORMATION (FOI)

During 1999–2000 no requests were made to the Institute under the provisions of the *Freedom of Information Act* 1982 (FOI Act).

The statement required under Section 8 of the FOI Act is at Appendix 1.

CUSTOMER SERVICE CHARTER

Departments, agencies and Government Business Enterprises which have an impact on the public are required to develop Service Charters in which agencies set standards of service for key undertakings seen as important by customers. This has relevance for work done in delivering research and other services to the private sector. A Charter about this work involves undertakings and standards about the way AIMS offers and provides its services.

During the reporting period AIMS implemented a Service Charter for dealing with its clients. The Charter has been posted to the AIMS website along with a feedback form (www.aims.gov.au/pages/about/corporate/csc-01.html).

YEAR 2000 COMPLIANCE

The Institute undertook considerable preparations to ensure Year 2000 (Y2K) compliance. All critical systems and the bulk of the secondary equipment were compliant by September/October of 1999. A Y2K Risk Analysis and Business Continuity Plan was developed, together with a series of measures designed to minimise any initial risk to staff. The Institute can report that no critical systems or equipment failed and normal operations continued on 1 January 2000 without incident.

ADVERTISING AND MARKET RESEARCH

AIMS does not undertake significant amounts of advertising. During the year advertising was placed in both print and electronic media for the normal processes of recruitment, requests for tender, and a limited amount of directed advertisements of the Institute's capacities as a collaborative research or commercial partner in particular matters.

During 1999–2000 AIMS commissioned a limited amount of market analysis related to potential commercialisation of its technologies.

FINANCIAL STATEMENTS

INCORPORATING:

- ☐ Statement by Directors
- ☐ Independent Audit Report
- ☐ Operating Statement for the year ended 30 June 2000
- ☐ Balance Sheet as at 30 June 2000
- ☐ Statement of Cash Flows for the year ended 30 June 2000
- ☐ Schedule of Commitments as at 30 June 2000
- ☐ Schedule of Unquantifiable Contingencies as at 30 June 2000
- ☐ Notes to and forming part of the Financial Statements
- ☐ Supplementary Financial Information for the year ended 30 June 2000

STATEMENT BY DIRECTORS OF THE AUSTRALIAN INSTITUTE OF MARINE SCIENCE

In our opinion, the attached financial statements give a true and fair view of the matters required by Schedule 2 of the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997* for the year ended 30 June 2000.



A E de N Rogers
Chairman of Council
11 September 2000



Dr J D Bell
Acting Director and Member of Council
11 September 2000



INDEPENDENT AUDIT REPORT

To the Minister for Industry, Science and Resources

Scope

I have audited the financial statements of Australian Institute of Marine Science for the year ended 30 June 2000. The financial statements comprise:

- Statement by Directors;
- Operating Statement;
- Balance Sheet;
- Statement of Cash Flows;
- Schedule of Commitments;
- Schedule of Contingencies; and
- Notes to and forming part of the Financial Statements.

The Directors are responsible for the preparation and presentation of the financial statements and the information they contain. I have conducted an independent audit of the financial statements in order to express an opinion on them to you.

The audit has been conducted in accordance with Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards, to provide reasonable assurance as to whether the financial statements are free of material misstatement. Audit procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the financial statements, and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion as to whether, in all material respects, the financial statements are presented fairly in accordance with Australian Accounting Standards, other mandatory professional reporting requirements and statutory requirements in Australia so as to present a view of the entity which is consistent with my understanding of its financial position, the results of its operations and its cash flows.

The audit opinion expressed in this report has been formed on the above basis.

GPO Box 707 CANBERRA ACT 2601
Centenary House 19 National Circuit
BARTON ACT
Phone (02) 6203 7300 Fax (02) 6203 7777

Audit Opinion

In my opinion,

- (i) the financial statements have been prepared in accordance with Schedule 2 of the Finance Minister's Orders; and
- (ii) the financial statements give a true and fair view, in accordance with applicable Accounting Standards, other mandatory professional reporting requirements and Schedule 2 of the Finance Minister's Orders, of the financial position of the Australian Institute of Marine Science as at 30 June 2000 and the results of its operations and its cash flows for the year then ended.

Australian National Audit Office



Edward M. Hay
Group Executive Director

Delegate of the Auditor-General

Canberra
15 September 2000

OPERATING STATEMENT

for the year ended 30 June 2000

	Notes	2000 \$'000	1999 \$'000
		<u> </u>	<u> </u>
Operating revenues			
Revenues from Government	5A	24,953	18,502
Sale of goods and services	5B	4,623	4,889
Interest and dividends	5C	626	498
Gains from sale of assets	5D	—	11
Sundry revenue		91	59
Total operating revenues		<u>30,293</u>	<u>23,959</u>
Operating expenses			
Employees	6A	11,575	11,330
Suppliers	6B	9,944	9,519
Depreciation	6C	1,478	2,158
Loss from disposal of assets	6D	5	34
Grants	6E	215	85
Total operating expenses		<u>23,217</u>	<u>23,126</u>
Operating surplus (before abnormal item)		7,076	833
Abnormal Revenue			
Valuation of assets	5E	—	3,328
Operating surplus (after abnormal item)		<u>7,076</u>	<u>4,161</u>
Accumulated deficits at beginning of reporting period		<u>(1,502)</u>	<u>(5,663)</u>
Total available for appropriation		5,574	(1,502)
Capital use charge provided for		(3,997)	—
Accumulated surpluses (deficits) at end of reporting period		<u>1,577</u>	<u>(1,502)</u>

The accompanying notes form part of these financial statements.

BALANCE SHEET

for the year ended 30 June 2000

	Notes	2000 \$'000	1999 \$'000
ASSETS			
Financial Assets			
Cash	7A	531	185
Investments	7B	12,829	8,500
Receivables	7C	594	375
Accrued Revenue	7D	456	260
Total financial assets		14,410	9,320
Non Financial Assets			
Buildings and improvements	8A	21,671	21,599
Infrastructure, plant and equipment	8B	11,845	9,259
Inventories		266	272
Other	8C	203	181
Total non-financial assets		33,985	31,311
Total assets		48,395	40,631
LIABILITIES			
Provisions and Payables			
Capital use	9A	3,997	—
Employees	9B	4,565	4,244
Suppliers	9C	1,175	501
Consultancies and grants	9D	807	1,114
Total provisions and payables		10,544	5,859
Total liabilities		10,544	5,859
Equity			
Capital	10	21,890	21,890
Reserves	10	14,384	14,384
Accumulated surpluses/(deficits)	10	1,577	(1,502)
Total equity		37,851	34,772
Total liabilities and equity		48,395	40,631
Current assets		14,879	9,773
Non-current assets		33,516	30,858
Current liabilities		7,297	3,826
Non-current liabilities		3,247	2,033

The accompanying notes form part of these financial statements.

STATEMENT OF CASH FLOWS

for the year ended 30 June 2000

	Notes	2000 \$'000	1999 \$'000
OPERATING ACTIVITIES			
Cash received			
Appropriations	5A	24,953	18,502
Sale of goods and services		4,067	4,475
Interest		460	542
Other		90	58
Total cash received		29,570	23,577
Cash Used			
Grants		(215)	(85)
Employees		(11,254)	(11,321)
Suppliers		(9,285)	(9,538)
Total cash used		(20,754)	(20,944)
Net cash from operating activities	11	8,816	2,633
INVESTING ACTIVITIES			
Cash received			
Proceeds from sale of property, plant & equipment		50	67
Total cash received		50	67
Cash Used			
Purchase of property, plant and equipment		(4,191)	(1,384)
Total cash used		(4,191)	(1,384)
Net cash from investing activities		(4,141)	(1,317)
Net increase in cash held		4,675	1,316
Cash at 1 July		8,685	7,369
Cash at 30 June		13,360	8,685

Note: Cash at 30 June is dissected as cash and investments. Refer notes 7A and 7B.

The accompanying notes form part of these financial statements.

SCHEDULE OF COMMITMENTS

for the year ended 30 June 2000

	Notes	2000 \$'000	1999 \$'000
BY TYPE			
CAPITAL COMMITMENTS			
Buildings, plant and equipment		13,169	444
Total capital commitments		13,169	444
OTHER COMMITMENTS			
Operating leases		224	459
CRC Reef		14,205	15,669
Contracts		6,547	3,314
Other		2,786	2,344
Total other commitments		23,762	21,786
Total commitments payable		36,931	22,230
Commitments receivable		—	—
Net commitments		36,931	22,230
BY MATURITY			
All net commitments			
One year or less		11,815	6,362
From one to two years		12,446	4,070
From two to five years		10,084	7,957
Over five years		2,586	3,841
Net commitments		36,931	22,230
Operating Lease Commitments			
One year or less		160	346
From one to two years		59	113
From two to five years		5	—
Over five years		—	—
Operating Lease Commitments		224	459

SCHEDULE OF UNQUANTIFIABLE CONTINGENCIES

As at 30 June 2000

At 30 June 2000, the Institute had a legal claim against it for damages. The Institute has denied liability and is defending the claim. It is not possible to estimate the outcome of this claim.

The accompanying notes form part of these financial statements.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

Note	Description
1	Summary of Significant Accounting Policies
2	Reporting by Segments
3	Economic Dependency
4	Subsequent Events
5	Operating Revenue
6	Operating Expenses - Goods and Services
7	Financial Assets
8	Non-Financial Assets
9	Provisions and Payables
10	Equity
11	Cash Flow Reconciliation
12	External Financing Arrangements
13	Remuneration of Directors
14	Related Party Disclosures
15	Remuneration of Officers
16	Remuneration of Auditors
17	Financial Instruments

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

1.1 Basis of Accounting

The financial statements are required by clause 1(b) of Schedule 1 of the Commonwealth Authorities and Companies Act 1997 and are a general-purpose financial report.

The statements have been prepared in accordance with:

- ☐ *Requirements for the Preparation of Financial Statements of Commonwealth Agencies and Authorities* made by the Minister for Finance and Administration in August 1999 (Schedule 2 to the Commonwealth Authorities and Corporation Act (CAC) Orders);
- ☐ Australian Accounting Standards;
- ☐ other authorities pronouncements of the Australian Accounting Standards Board;
- ☐ the Consensus Views of the Urgent Issues Group.

The Statements have been prepared having regard to:

- ☐ Statements of Accounting Concepts; and
- ☐ The Explanatory Notes to Schedule 2 issued by the Department of Finance and Administration.

The financial statements have been prepared on an accrual basis and are in accordance with historical cost convention, except for certain assets, which as noted, are at valuation. Except where stated, no allowance is made for the effects of changing prices on the results or on the financial position of the Institute.

1.2 Rounding

Amounts are rounded to the nearest \$1,000 except in relation to:

- ☐ remuneration of directors (Councillors);
- ☐ remuneration of officers; and
- ☐ remuneration of auditors.

1.3 Taxation

The Institute is exempt from all forms of taxation except fringe benefits tax and goods and services tax.

1.4 Inventories

Inventories held represent stores of consumables and other goods not for resale. Inventories are valued at cost except where they are no longer required, in which case they are valued at net realisable value.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

1.5 Property, Plant and Equipment

Asset recognition threshold

Purchases of property, plant and equipment are recognised initially at cost in the Balance Sheet, except for purchases costing less than \$2,000, which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

Revaluations

Schedule 2 requires that buildings, infrastructure, plant and equipment be revalued progressively in accordance with the 'deprival' method of valuation in successive 3-year cycles.

The requirements of Schedule 2 are being implemented as follows:

- ☐ buildings and improvements were revalued as at 30 June 1998;
- ☐ library and library contents were revalued on 1 July 1998;
- ☐ plant and equipment assets were revalued at 30 June 1999.

Property plant and equipment is recognised at its depreciated replacement cost.

All assets which would not be replaced or are surplus to requirements are valued at net realisable value. At 30 June 2000 the Institute had no assets in this situation.

All valuations are independent.

Recoverable amount test

The carrying amount of each item of non-current property, plant and equipment assets is reviewed to determine whether it is in excess of the asset's recoverable amount. If an excess exists as at the reporting date, the asset is written down to its recoverable amount immediately. In assessing recoverable amounts, the relevant cash flows, including the expected cash inflows from future appropriations by the Parliament, have been discounted to their present value.

Depreciation

Depreciable property, plant and equipment assets are written off to their estimated residual values over their estimated useful lives to the Institute using, in all cases, the straight line method of depreciation.

Depreciation rates (useful lives) and methods are reviewed at each balance date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate. Residual values are re-estimated for a change in prices only when assets are revalued.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

Depreciation rates applying to each class of depreciable assets are based on the following useful lives:

	<u>1999-2000</u>	<u>1998 - 99</u>
Buildings and improvements	10 to 60 years	10 to 60 years
Plant and equipment	3 to 20 years	3 to 20 years

The aggregate amount of depreciation allocated for each class of asset during the reporting period is disclosed in Note 6C.

1.6 Liability for Employee Entitlements

Leave

The liability for employee entitlements encompasses provisions for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken by the Institute's employees in the future is estimated to be less than the annual entitlement for sick leave.

The provision for annual leave reflects the value of total annual leave entitlements of all employees at 30 June 2000 and is recognised at its nominal value.

The non-current portion of the liability for long service leave is recognised and measured at the present value of the estimated future cash flows to be made in respect of all employees at 30 June 2000. In determining the present value of the liability, attrition rates and pay increases through promotion and inflation have been taken into account.

Superannuation

Employees contribute to the Commonwealth Superannuation Scheme and the Public Sector Superannuation Scheme. Employer contributions amounting to \$1,373,926 (1998-99: \$1,262,262) for the Institute in relation to these schemes have been expensed in these financial statements.

1.7 Investments

The Australian Institute of Marine Science (AIMS) is a member Institute of AMRAD Corporation Ltd (AMRAD). Under an "Institute Agreement" between AMRAD, the Victorian Medical Consortium Pty Ltd (VMC) and AIMS, AMRAD has allotted to VMC 333,334 fully paid one dollar shares to be held in trust for AIMS. The agreement allows AIMS to require VMC to transfer to it all or part of the shares and any bonus shares, or to sell such shares and pay the proceeds to AIMS. This can only occur if AIMS is still a party to the Institute Agreement upon the first ninth anniversary of the date of execution of the Agreement (29 October 1993). The shares have not been brought to account in the Institute's financial statements as it is considered that the Institute is unable to exercise any ownership or control over these assets at the present time.

Cash held on term deposit with banks is included in the investments.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

1.8 Appropriations

From 1 July 1999, the Commonwealth Budget has been prepared under an accruals framework. Under this framework, Parliament appropriates monies to the Institute as revenue appropriations, as loan appropriations and as equity injection.

Revenue Appropriations

Revenues from government are revenues of the core operating activities, infrastructure development, asset replacement and capital use charge of the Institute.

Appropriations for outputs are recognised as revenue to the extent they have been received into the Institute's bank account or are entitled to be received by the Institute at year-end.

1.9 Other Revenue

Revenue from sale of goods is recognised upon delivery of goods and services to customers.

Interest revenue is recognised on a proportional basis taking into account the interest rates applicable to the financial assets.

1.10 Capital Use Charge

A capital use charge of 12% is imposed by the Commonwealth on the net assets of the Institute. The charge is adjusted to take into account assets, gifts and revaluation increments during the financial year.

1.11 Leases

A distinction is made between finance leases which effectively transfer from the lessor to the lessee substantially all the risks and benefits incidental to ownership of leased assets and operating leases under which the lessor effectively retains substantially all such risk and benefits.

Operating lease payments are charged to the Operating Statement on a basis which is representative of the pattern of benefits derived from the leased assets.

1.12 Bad and Doubtful Debts

Bad debts are expensed during the year in which they are identified, to the extent they have not previously been provided for. A provision is raised for doubtful debts based on a review of all outstanding receivables at year end.

1.13 Cash

Cash includes deposits held at call with banks, investments in money market instruments and short term deposits.

1.14 Financial Instruments

Accounting policies in relation to financial instruments are disclosed in Note 17.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

1.15 Comparative Figures

Where necessary, comparative figures have been adjusted to conform with changes in presentation in these financial statements.

1.16 Changes in Accounting Policies

Changes in accounting policy have been identified in this note under their appropriate headings.

1.17 Research, Development and Intellectual Property

Costs associated with research and development, intellectual property, patents and trademarks are expensed as incurred.

1.18 Contract Research

The Institute has entered into various agreements with external parties for the research and development of technologies and scientific knowledge. Details of the ownership of intellectual property vary from agreement to agreement. These agreements do not involve sharing in common of liabilities and interest in assets, other than assets represented by intellectual property to which the Institute does not attribute any value in the accounts.

1.19 Consultancies and Grants

Various consultancies and grants have been made to the Institute for specific research projects, seminars, workshops and employment assistance. Monies are paid either in advance or arrears and the difference at 30 June is reflected as either unearned revenue or receivables respectively. Additionally, the Institute used consultants and provided grants to assist research projects.

2. REPORTING BY SEGMENTS

The Institute operates in a single industry and geographical segment, being provision of government programs in Australia. The Australian Institute of Marine Science operates in the marine science research industry.

3. ECONOMIC DEPENDENCY

The Institute is dependent on appropriations from The Parliament of the Commonwealth for its continued existence and ability to carry on its normal activities.

4. SUBSEQUENT EVENTS

The Institute is not aware of any material events that have occurred subsequent to balance date.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

	2000 \$'000	1999 <u>\$'000</u>
5. OPERATING REVENUE		
5A Revenue from Government		
Appropriation – operating	16,703	16,506
Appropriation – asset replacement	1,439	—
Appropriation – infrastructure	2,994	1,996
Appropriation – capital use charge	3,817	—
	<u>24,953</u>	<u>18,502</u>
The appropriation – capital use charge is a revenue that is repayable to the Government.		
5B Sale of Goods and Services		
Australian Industry	950	992
Australian Governments	403	759
Joint Government/Industry	2,200	2,069
International Industry	581	691
International Governments	477	378
International Joint Government/Industry	12	—
	<u>4,623</u>	<u>4,889</u>
5C Interest		
Term deposits	626	498
	<u>626</u>	<u>498</u>
5D Gains from Sale of Assets		
Plant and equipment	—	11
	—	<u>11</u>
5E Abnormal Revenue		
Valuation of library	—	3,328
	—	<u>3,328</u>

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

	2000	1999
	<u>\$'000</u>	<u>\$'000</u>
6. OPERATING EXPENSES - GOODS AND SERVICES		
6A Employees Expenses		
Basic remuneration for services provided	8,605	8,565
Related employees expenses:		
Superannuation	1,374	1,262
Provision for annual recreation leave	828	965
Provision for long service leave	376	295
Fringe benefit tax	281	128
Remote location subsidy	66	85
Workers compensation insurance	<u>45</u>	<u>30</u>
Total employee expenses	<u>11,575</u>	<u>11,330</u>

The Institute contributes to the Commonwealth Superannuation (CSS) and the Public Sector Superannuation (PSS) schemes which provide retirement, death and disability benefits to employees. Contributions to the schemes are at rates calculated to cover existing and emerging obligations. Current contribution rates are 25.6% of salary (CSS) and 11.4% of salary (PSS). An additional 3% is contributed for employee productivity benefits.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

	2000	1999
	<u>\$'000</u>	<u>\$'000</u>
6. OPERATING EXPENSES - GOODS AND SERVICES (continued)		
6B Suppliers Expenses		
Operating lease rentals	393	421
Supply of goods and services		
Appointment expenses	108	92
Equipment and software purchases	422	391
Catering subsidy	62	77
Chemical supplies	73	105
Cleaning and ground maintenance	185	172
Communications, telephone, postage	307	317
Consultancies	1,030	484
Consumables	779	711
Electricity	340	294
Field costs	51	29
Freight	141	146
Fuel, oil, distillates	445	434
Hire of equipment	419	517
Insurances	100	102
Laboratory expenses	114	158
Legal expenses	91	65
Licenses and fees	108	105
Loss on revaluation	—	163
Patents and trade marks	84	81
Publications, journals, subscriptions	505	383
Rent	82	82
Repairs and maintenance	1,153	1,170
Security	145	131
Stationery	77	85
Training, seminars and conferences	129	134
Travel and accommodation	1,123	1,247
Vessels management and staffing	1,378	1,285
Victuals	41	56
Water	59	82
Total suppliers expenses	<u>9,944</u>	<u>9,519</u>

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

	2000 \$'000	1999 \$'000
6. OPERATING EXPENSES - GOODS AND SERVICES (continued)		
6C Depreciation		
Depreciation property, plant, equipment	<u>1,478</u>	<u>2,158</u>
The aggregate amounts of depreciation allocated during the reporting period, either as an expense or as part of the carrying amount of other assets, for each class of depreciable asset are as follows:		
Building and improvements	452	449
Computer equipment	184	509
Vehicles	65	62
Office equipment	23	49
Plant and equipment	446	772
Ships, launches and vessels	104	113
Library	<u>204</u>	<u>204</u>
	<u>1,478</u>	<u>2,158</u>
6D Losses from Disposal of Assets		
Plant and equipment	<u>5</u>	<u>34</u>
Total losses	<u>5</u>	<u>34</u>
Gains from sale of assets are disclosed in Note 5D.		
6E Grants		
Non-profit institutions	<u>215</u>	<u>85</u>
	<u>215</u>	<u>85</u>

The Institute provides grants to various organisations for the purpose of marine science research.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

	2000 \$'000	1999 <u>\$'000</u>
7. FINANCIAL ASSETS		
7A Cash		
Cash on hand	5	5
Cash at bank	521	10
Deposits at call	<u>5</u>	<u>170</u>
	<u>531</u>	<u>185</u>
7B Investments		
Term deposits	<u>12,829</u>	<u>8,500</u>
	<u>12,829</u>	<u>8,500</u>
Balance of cash as at 30 June	<u>13,360</u>	<u>8,685</u>
7C Receivables		
Goods and services	597	378
Provision for doubtful debts	<u>(3)</u>	<u>(3)</u>
	<u>594</u>	<u>375</u>
Receivables includes amounts overdue by		
-less than 30 days	558	300
-more than 30 days and less than 60 days	36	73
-more than 60 days	<u>3</u>	<u>5</u>
	<u>597</u>	<u>378</u>
7D Accrued Revenue		
Consultancies and grants	264	234
Interest received	<u>192</u>	<u>26</u>
	<u>456</u>	<u>260</u>

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

	2000 \$'000	1999 <u>\$'000</u>
8. NON-FINANCIAL ASSETS		
8A Buildings and Improvements		
Buildings and improvements at independent valuation 30 June 1998	22,034	22,034
Accumulated depreciation	897	449
	<u>21,137</u>	<u>21,585</u>
 Buildings and improvements at cost	 537	 14
Accumulated depreciation	3	—
	<u>534</u>	<u>14</u>
 Total buildings and improvements	 <u>21,671</u>	 <u>21,599</u>
 8B Plant, Equipment and Other		
Plant and equipment at independent valuation 30 June 1999	2,785	2,797
Accumulated depreciation	374	—
	<u>2,411</u>	<u>2,797</u>
 Plant and equipment at cost	 716	 —
Accumulated depreciation	71	—
	<u>645</u>	<u>—</u>
 Total plant and equipment	 <u>3,056</u>	 <u>2,797</u>
 Computer equipment at independent valuation 30 June 1999	 779	 780
Accumulated depreciation	154	—
	<u>625</u>	<u>780</u>
 Computer equipment at cost	 713	 —
Accumulated depreciation	30	—
	<u>683</u>	<u>—</u>
 Total computer equipment	 <u>1,308</u>	 <u>780</u>
 Vehicles at independent valuation 30 June 1999	 302	 332
Accumulated depreciation	57	—
	<u>245</u>	<u>332</u>
 Vehicles at cost	 159	 —
Accumulated depreciation	8	—
	<u>151</u>	<u>—</u>
 Total vehicles	 <u>396</u>	 <u>332</u>

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

	2000 \$'000	1999 \$'000
8. NON-FINANCIAL ASSETS (continued)		
Office equipment at independent valuation 30 June 1999	137	137
Accumulated depreciation	<u>23</u>	<u>—</u>
	<u>114</u>	<u>137</u>
Office equipment at cost	10	—
Accumulated depreciation	<u>—</u>	<u>—</u>
	<u>10</u>	<u>—</u>
Total office equipment	<u>124</u>	<u>137</u>
Ships, launches and vessels at independent valuation 30 June 1999	1,652	1,652
Accumulated depreciation	<u>99</u>	<u>—</u>
	<u>1,553</u>	<u>1,652</u>
Ships, launches and vessels at cost	103	—
Accumulated depreciation	<u>5</u>	<u>—</u>
	<u>98</u>	<u>—</u>
Total ships, launches and vessels	<u>1,651</u>	<u>1,652</u>
Library books at independent valuation 1 July 1998	3,328	3,328
Accumulated depreciation	<u>408</u>	<u>204</u>
Total library books	<u>2,920</u>	<u>3,124</u>
Capital work in progress	2,390	437
Total plant, equipment and other	<u>11,845</u>	<u>9,259</u>
Total buildings, plant and equipment	<u>33,516</u>	<u>30,858</u>
8C Other Non-Financial Assets		
Work in progress	29	16
Sundry	<u>174</u>	<u>165</u>
	<u>203</u>	<u>181</u>

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

8. NON-FINANCIAL ASSETS (continued)

8D. Analysis of Property, Plant and Equipment

Table A

Movement summary 1999-00 for all assets irrespective of valuation basis

	Buildings & Improvements \$'000	Plant Equipment & Other \$'000	Total \$'000
Gross value as at 1 July 1999	22,048	9,463	31,511
Additions	523	1,701	2,224
Disposals	—	(43)	(43)
Capital work in progress accumulated during the financial year	—	1,953	1,953
Gross value as at 30 June 2000	22,571	13,074	35,645
Accumulated depreciation as at 1 July 1999	449	204	653
Depreciation charge for assets held 1 July 1999	448	911	1,359
Depreciation charge for additions	3	114	117
Accumulated depreciation as at 30 June 2000	900	1,229	2,129
Net book value as at 30 June 2000	21,671	11,845	33,516
Net book value as at 1 July 1999	21,599	9,259	30,858

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

8. NON-FINANCIAL ASSETS (continued)

Table B

Summary of balances of assets at valuation as at 30 June 2000

	Buildings & Improvements \$'000	Plant Equipment & Other \$'000	Total \$'000
As at 30 June 2000			
Gross value as at 30 June 2000	22,571	13,074	35,645
Accumulated depreciation	900	1,229	2,129
Net book value	21,671	11,845	33,516
As at 30 June 1999			
Gross value	22,048	9,463	31,511
Accumulated depreciation	449	204	653
Net book value	21,599	9,259	30,858
	2000 \$'000	1999 \$'000	
9. PROVISIONS AND PAYABLES			
9A Capital Usage			
Charge based on net assets (refer to Note 5A)	3,997	—	
9B Employees			
Salaries and wages	259	163	
Annual leave	1,891	1,849	
Long service leave	2,357	2,133	
Fringe benefit tax	10	47	
Sundry	48	52	
Aggregate employee entitlement liability	4,565	4,244	
9C Suppliers			
Creditors	1,175	501	
	1,175	501	
9D Grants			
Non-profit institutions	567	563	
Profit institutions	18	361	
Overseas entities	222	190	
	807	1,114	

NOTES TO AND FORMING PART OF THE
FINANCIAL STATEMENTS
for the year ended 30 June 2000

10. EQUITY

Item	Capital		Accumulated Results		Asset Revaluation Reserve		Total Reserves		TOTAL EQUITY	
	2000	1999	2000	1999	2000	1999	2000	1999	2000	1999
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Balances 1 July	21,890	21,890	(1,502)	(5,663)	14,384	14,300	14,384	14,300	34,772	30,527
Operating Result	—	—	7,076	4,161	—	—	—	—	7,076	4,161
Net Revaluation Increases/(Decreases)	—	—	—	—	—	84	—	84	—	84
Capital Use Charge	—	—	(3,997)	—	—	—	—	—	(3,997)	—
Balances 30 June	21,890	21,890	1,577	(1,502)	14,384	14,384	14,384	14,384	37,851	34,772

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

	2000 \$'000	1999 <u>\$'000</u>
11. CASH FLOW RECONCILIATION		
Reconciliation of operating surplus to net cash provided from operating activities to Net Cost of Services		
Operating Surplus	7,076	833
Capital use charge	(3,997)	—
Depreciation	1,478	2,158
Loss on disposal of non-current assets	5	34
Profit on disposal of non-current assets	—	(11)
(Increase)/Decrease in receivables	(218)	467
(Increase)/Decrease in accrued revenue	(196)	(260)
(Increase)/Decrease in inventory	6	2
(Increase)/Decrease in other assets	(22)	22
Increase/(Decrease) in capital use payable	3,997	—
Increase/(Decrease) in employees provisions	320	456
Increase/(Decrease) in suppliers payable	674	(1,231)
Increase/(Decrease) in other creditors	(307)	—
Loss on revaluation of non-current assets	—	163
Net cash provided from operating activities	<u>8,816</u>	<u>2,633</u>

12. EXTERNAL FINANCING ARRANGEMENTS

The Institute has guarantee arrangements with the Commonwealth Bank of Australia totalling:

Total facilities	594	1,850
Amount of facility used as at 30 June	<u>244</u>	<u>365</u>
Facility available	<u>350</u>	<u>1,485</u>

The facilities are guarantees provided which do not appear on the Balance Sheet.

The accompanying notes form part of these financial statements.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

	2000	1999
	<u>\$</u>	<u>\$</u>
13. REMUNERATION OF DIRECTORS (COUNCILLORS)		
Aggregate amount of superannuation payments in connection with the retirement of directors	26,822	15,868
Other remuneration received or due and receivable by directors of the Institute	334,341	190,997
Total remuneration received or due and receivable by the directors of the Institute	361,163	206,865
Total number of directors of the Institute included in these figures are shown below in the relevant remuneration bands	Number	Number
<input type="checkbox"/> \$Nil - \$10,000	—	4
<input type="checkbox"/> \$10,001 - \$20,000	4	1
<input type="checkbox"/> \$20,001 - \$30,000	1	—
<input type="checkbox"/> \$30,001 - \$40,000	1	—
<input type="checkbox"/> \$170,001 - \$180,000	—	1
<input type="checkbox"/> \$250,001 - \$260,000	1	—
	<u>7</u>	<u>6</u>

The Directors (Councillors) of the Australian Institute of Marine Science are appointed by the Minister for Industry, Science and Resources.

14. RELATED PARTY DISCLOSURES

The Directors (Council members) of the Australian Institute of Marine Science Council, during the financial year were:

- ☐ Mr N Rogers (Chairman)
- ☐ Dr R Reichelt (Resigned 9/5/2000)
- ☐ Mr B McKay
- ☐ Dr W Craik
- ☐ Mr B Guthrie
- ☐ Professor M Sleight
- ☐ Dr J Bell (Appointed 20/4/2000)

The aggregate remuneration of Directors (Councillors) is disclosed in Note 13.

The aggregate of superannuation payments made in connection with the retirement of Directors was \$26,822 (1998/99 - \$15,868).

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

14. RELATED PARTY DISCLOSURES (continued)

Loans to Directors and Director related entities

There were no loans made to any Director or Director related entities during the period.

Other Transactions with Directors or Director related entities

There were no other transactions with Directors or Director related entities during the period.

	2000	1999
	<u>\$</u>	<u>\$</u>

15. REMUNERATION OF OFFICERS

Income received or due and receivable by officers	<u>401,343</u>	<u>385,515</u>
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The number of officers included in these figures are shown below in the relevant income bands:

	Number	Number
<input type="checkbox"/> \$120,001 - \$130,000	2	2
<input type="checkbox"/> \$130,001 - \$140,000	—	1
<input type="checkbox"/> \$140,001 - \$150,000	1	—
	<u>3</u>	<u>3</u>

The officer remuneration includes all officers concerned with or taking part in the management of the Institute during 1999-2000 except the Director. Details in relation to the Director have been incorporated in Note 13 – Remuneration of Directors (Councillors).

16. REMUNERATION OF AUDITORS

	<u>\$</u>	<u>\$</u>
Remuneration to the Auditor-General for auditing the financial statements for the reporting period	<u>38,500</u>	<u>38,500</u>

No other services were provided by the Auditor-General during the reporting period.

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS for the year ended 30 June 2000

17. FINANCIAL INSTRUMENTS

Table A. Terms, Conditions and Accounting Policies.

Financial Instruments	Notes	Accounting policies and methods (Including recognition criteria and measurement basis)	Nature of underlying instrument (Including significant terms and conditions affecting the amount, timing and certainty of cash flows)
Financial Assets			
Deposits at Call	7A	Financial assets are recognised when control over future economic benefits is established and the amount of the benefit can be reliably measured. Deposits are recognised at their nominal value. Interest is credited to revenue as it accrues.	
Receivables for Goods and Services	7B	These receivables are recognised at the nominal amounts due less any provisions for bad and doubtful debts. Provisions are made when collection of the debt is judged to be less rather than more likely.	Credit Terms are net 30 days (1999 – 00 : 30 days)
Term Deposit	7C	The deposit is recognised at cost. Interest is accrued as it is earned.	Various term deposits are with the Institute's banks, with a maximum maturity of 24 months. The term deposits earn an average annual interest rate of 5.56%.
Financial Liabilities			
Trade Creditors	9C	Financial Liabilities are recognised when a present obligation to another party is entered into and the amount of the liability can be reliably measured. Creditors and accruals are recognised at their nominal amounts, being the amounts at which the liabilities will be settled. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).	Settlement is usually made based on the settlement period established for individual trade creditors, being 7, 14 or 30 days.

**NOTES TO AND FORMING PART OF THE
FINANCIAL STATEMENTS**
for the year ended 30 June 2000

17. FINANCIAL INSTRUMENTS (continued)

Table B. Interest Rate Risk

Financial Instrument	Notes	Interest Rates		Non-Interest Bearing	Total	Weighted Average Interest Rate
		Floating	Fixed			
Financial Assets (Recognised)						
Cash at Bank	7A	521			521	3.60
Cash on Hand	7A			5	5	n/a
Deposits at Call	7A	5			5	5.00
Receivables for Goods and Services	7C, 7D			1,053	1,053	n/a
Term Deposit	7B		12,829		12,829	5.71
Total Financial Assets (Recognised)		526	12,829	1,058	14,413	
Total Assets					48,395	
Financial Liabilities (Recognised)						
Trade Creditors	9C			1,175	1,175	n/a
Total Financial Liabilities (Recognised)				1,175	1,175	
Total Liabilities					10,544	

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2000

17. FINANCIAL INSTRUMENTS (continued)

Table C. Net Fair Values of Financial Assets and Liabilities

		2000		1999	
	Note	Total Carrying Amount \$'000	Aggregate Net Fair Value \$'000	Total Carrying Amount \$'000	Aggregate Net Fair Value \$'000
Financial Assets					
Cash at bank	7A	521	521	10	10
Cash on hand	7A	5	5	5	5
Deposits at call	7A	5	5	170	170
Receivables for goods and services	7C	1,053	1,053	638	638
Term deposits	7B	12,829	12,829	8,500	8,500
Total Financial Assets		14,413	14,413	9,323	9,323
Financial Liabilities					
Trade creditors	9C	1,175	1,175	501	501
Total Financial Liabilities		1,175	1,175	501	501

Financial Assets

The net fair values of cash, deposits on call and non-interest bearing monetary financial assets are approximated by their carrying amount.

The net fair value of term deposits are based on discounted cash flows using current interest rates for assets with similar risk profiles.

Financial Liabilities

The net fair values for trade creditors, which are short term in nature, are approximated by their carrying amount.

D. Credit Risk Exposure

The Institute's maximum exposures to credit risk at reporting date in relation to each class of recognised financial asset is the carrying amount of those assets as indicated in the Balance Sheet.

The Institute has no significant exposure to any concentrations of credit risk.

All figures for credit risk referred to do not take into account the value of any collateral or other security.

SUPPLEMENTARY FINANCIAL INFORMATION

for the year ended 30 June 2000

UNAUDITED

REVENUE COMPARISON

	2000	1999	1998	1997	1996
	\$'000	\$'000	\$'000	\$'000	\$'000
Consultancies and grants	4,623	4,889	5,284	5,494	4,516
Contribution in kind	—	—	—	—	143
Interest	626	498	294	327	452
Other revenue	91	70	109	44	350
Sub - total	5,340	5,457	5,687	5,865	5,461
Appropriation operating	16,703	16,506	16,388	16,445	16,604
Appropriation asset replacement	1,439	—	—	—	—
Appropriation capital & infrastructure	2,994	1,996	—	—	—
Appropriation Capital use charge	3,817	—	—	—	—
Total appropriation	24,953	18,502	16,388	16,445	16,604
Abnormal income	—	3,328	—	—	—
Total Revenue	30,293	27,287	22,075	22,310	22,065
External earnings ratio	22%	23 %	24 %	25 %	22%

EXTERNAL EARNINGS TARGET

In 1990 the Commonwealth Government set external earnings targets for the three science agencies (AIMS, CSIRO, and ANSTO). The specific aim of the targets was to encourage closer relations between the researchers, industry and other potential users. It was foreseen that this would, among other things, lead to benefits arising from research being more available to Australian Industry.

AIMS' external earnings target is 20 per cent of total revenue adjusted for unrelated revenue. The actual has been calculated by excluding interest and other revenue from the external subtotal and excluding asset replacement capital, infrastructure and capital use charge from the appropriation total.

The ratio for 1998-1999 has been restated on this basis.

SUPPLEMENTARY FINANCIAL INFORMATION

for the year ended 30 June 2000

UNAUDITED

SOURCE OF EXTERNAL EARNINGS BY INDUSTRY

	2000 \$'000	1999 \$'000	1998 \$'000
Australian Government	458	759	874
Aus Joint Gov/Industry	2,200	2,069	2,271
International Governments	477	378	218
Australian Industry	895	992	1,505
International Industry	581	679	416
International Joint Gov/Indus	12	12	—
	4,623	4,889	5,284

COOPERATIVE RESEARCH CENTRE (CRC)

In 1994 the Institute entered into agreement with two Cooperative Research Centres, Ecologically Sustainable Development in the Great Barrier Reef (known as CRC Reef Centre) and CRC Aquaculture.

Comparison of contribution resulting from CRCs are :-

	2000 \$'000	1999 \$'000	1998 \$'000	1997 \$'000	1996 \$'000
AIMS contribution in kind to the two CRCs were:					
CRC Reef Centre	2,147	1,605	1,499	2,208	1,787
CRC Aquaculture	499	511	543	479	454
Research income received from CRCs were:					
CRC Reef Centre	1,090	981	1,260	1,470	1,203
CRC Aquaculture	336	313	295	323	233

EMPLOYEE STAFF YEARS

Comparison of staff years for the last five years:

	2000	1999	1998	1997	1996
Science appropriation	81.20	74.00	68.81	74.32	80.07
Science external	16.90	29.70	39.16	35.45	29.25
Science	98.10	103.70	107.97	109.77	109.32
Support	61.60	58.70	58.14	61.78	71.70
Total Institute	159.70	162.40	166.11	171.55	181.02

SUPPLEMENTARY FINANCIAL INFORMATION

for the year ended 30 June 2000

UNAUDITED

COST OF OUTPUT BY RESEARCH PROJECTS

	1999 - 2000					1999	1998
	Variable	Employees	Fixed	Overheads	Total	Total	Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Human impacts on coastal marine ecology							
Appropriation	392	840	333	1,032	2,597	2,781	2,920
External	458	315	231	387	1,391	1,361	1,337
	850	1,155	564	1,419	3,988	4,142	4,257
Sustaining coral reefs							
Appropriation	467	947	552	1,165	3,131	2,268	2,291
External	486	253	331	311	1,381	1,198	1,148
	953	1,200	883	1,476	4,512	3,466	3,439
Monitoring change in tropical marine biota							
Appropriation	216	786	430	967	2,399	2,269	2,430
External	37	—	16	—	53	292	378
	253	786	446	967	2,452	2,561	2,808
Marine biogeochemistry of marine contaminants							
Appropriation	127	609	265	749	1,750	1,955	2,139
External	122	2	33	2	159	178	600
	249	611	298	751	1,909	2,133	2,739
Supporting tropical fisheries							
Appropriation	137	798	329	982	2,246	2,326	2,121
External	480	7	350	9	846	534	499
	617	805	679	991	3,092	2,860	2,620
Predicting the coastal marine environment							
Appropriation	129	529	217	651	1,526	1,603	1,438
External	34	59	42	73	208	247	359
	163	588	259	724	1,734	1,850	1,797
Marine biotechnology							
Appropriation	158	662	173	814	1,807	1,623	1,801
External	322	360	117	443	1,242	1,244	698
	480	1,022	290	1,257	3,049	2,867	2,499
Marine bioproducts							
Appropriation	198	809	264	995	2,266	1,454	784
External	30	—	—	—	30	1,469	2,346
	228	809	264	995	2,296	2,923	3,130
External other	8	38	92	47	185	324	567
Summary							
Appropriation	1,824	5,980	2,563	7,355	17,722	16,279	15,924
External	1,977	1,034	1,212	1,272	5,495	6,847	7,932
Total	3,801	7,014	3,775	8,627	23,217	23,12	23,856

NB: The Corporate and Support Section expenditure has been apportioned to Research Projects in proportion to salary incurred by each project and it is shown as overheads.

APPENDIXES

APPENDIX 1 — FREEDOM OF INFORMATION STATEMENT

The *Freedom of Information Act 1982* (FOI Act) requires each Commonwealth Government agency to publish a statement setting out its role, structure and functions, the documents available for public inspection, and access to such documents. Section 8 of the FOI Act requires each agency to publish information on the way it is organised, its powers, decisions made and arrangements for public involvement in its work.

This statement, in conjunction with information contained in this annual report, is intended to meet the requirements of Section 8 of the FOI Act.

ROLE, STRUCTURE AND FUNCTIONS

The Institute's role, structure and functions are described in this annual report, particularly in the section About the Australian Institute of Marine Science (pp. 1 - 7) and in the Report of Operations: Part C – Institute Structure and Governance (pp. 40 - 51).

DOCUMENTS AVAILABLE FOR INSPECTION

The following types of documents are available for inspection at the Institute:

Strategic Directions	File, publication*
Research Plan	Files, publication*
Annual Operational Plan	File, unpublished document
Project details	Database, files
Final project reports	Publications
Non-technical summaries of final project reports	Publications*
R&D funding applications	Files
Annual Report	File, publications*
Administration	Files, unpublished document
Mailing lists	Database

*These documents are also available on the Institute's website (www.aims.gov.au).

Copies of publications and reports are available on request, generally free of charge except for final project reports. Some other information may be subject to assessment of access for such matters as commercial confidentiality or personal privacy.

Facilities for reviewing documents are provided at AIMS. The Institute's publications are on display for the public and may be purchased through the AIMS Bookshop. General inquiries concerning access to documents, or other matters relating to FOI, should be directed to:

Human Resources Manager
Australian Institute of Marine Science
PMB No 3, Townsville Mail Centre Qld 4810
Telephone: (07) 4753 4319
Facsimile: (07) 4772 5852

APPENDIX 2 — THE INSTITUTE’S LEGISLATIVE FOUNDATION AND THE EXERCISE OF MINISTERIAL POWERS

ENABLING LEGISLATION

The Australian Institute of Marine Science is a Statutory Authority established on 9 June 1972 by the *Australian Institute of Marine Science Act* (AIMS Act).

The Institute is responsible to the Minister for Industry, Science and Resources.

FUNCTIONS

The functions of AIMS, as defined in section 9 of the AIMS Act, are to:

- (a) Carry out research and development in relation to marine science and marine science technology
- (b) Encourage and facilitate the application and use of the results of research and development of that kind
- (c) Arrange for carrying out research and development of that kind
- (d) Co-operate with other institutions and persons in carrying out research and development of that kind
- (e) Provide any other institution or person with facilities for carrying out research and development of that kind
- (f) Collect and disseminate information relating to marine science and marine technology and, in particular, to publish reports and other papers
- (g) Provide and sell goods (whether produced by the Institute or purchased or otherwise acquired by the Institute) and services in connection with matters related to its research and development activities in marine science and marine technology
- (h) Make available to others, on a commercial basis, the knowledge, expertise, equipment and facilities of the Institute
- (i) Do anything incidental or conducive to the performance of any of the functions in paragraphs (a) to (h).

POWERS OF THE INSTITUTE

Subject to the AIMS Act, the Institute is empowered under section 10 of the Act to do all things necessary or convenient to be done for, or in connection with, the performance of its functions, including power to:

- (a) enter into contracts;
- (b) acquire, hold and dispose of personal property;
 - (ba) to take on hire, or to accept on loan, equipment (including vessels) or other goods needed for the purposes of the Institute;
 - (bb) to lend or to hire out equipment (including vessels) or other goods that are the property of the Institute;
- (c) purchase or take on lease land or buildings, and to erect buildings, necessary for the purposes of the Institute;

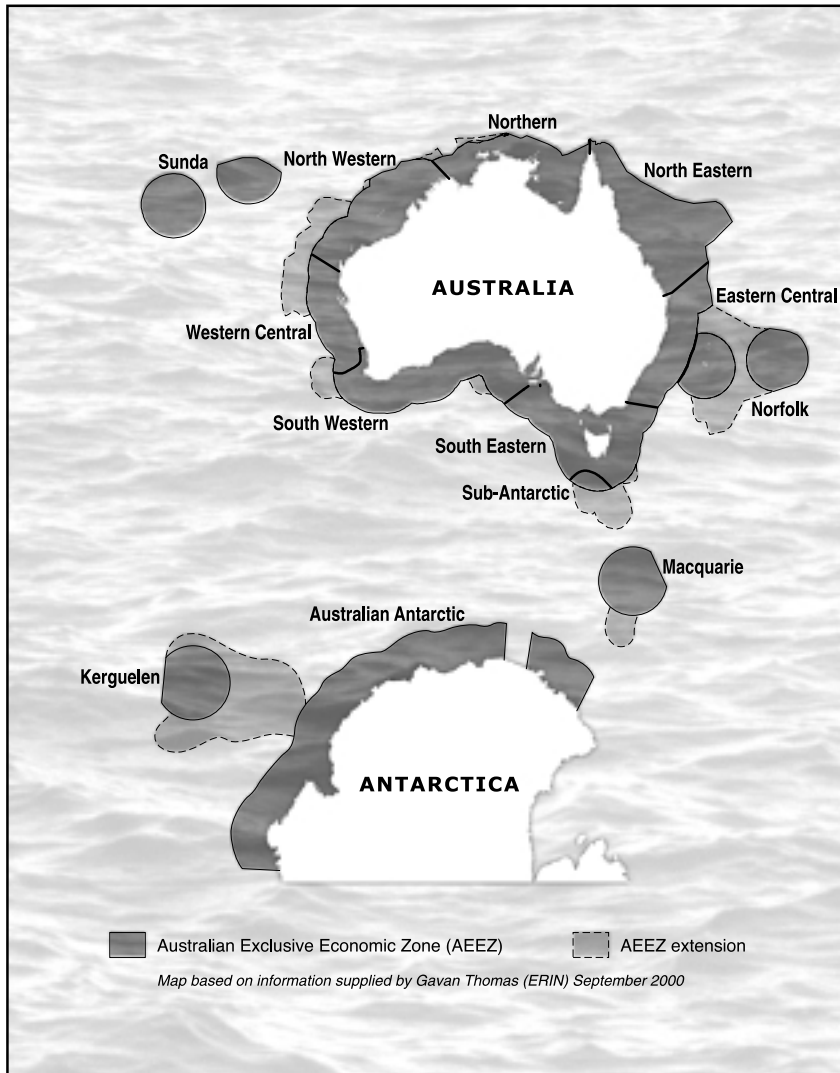
- (d) dispose of, or grant leases of, land or buildings vested in the Institute;
- (e) occupy, use and control any land or building owned or held under lease by the Commonwealth and made available for the purposes of the Institute;
- (f) participate in partnerships, trusts, unincorporated joint ventures and other arrangements for sharing profits;
- (g) subscribe for and to purchase shares in, and debentures and other securities of, companies;
- (h) form, and to participate in the formation of, companies; and
- (i) appoint agents and attorneys, and to act as agents for other persons;
- (j) accept anything given or transmitted to the Institute whether on trust or otherwise, and to act as trustee of money or other property vested in the Institute on trust;
- (k) arrange for displaying material and giving lectures, to the public or otherwise, in respect of matters relating to marine science and marine technology.

MINISTERIAL POWERS OF DIRECTION

Under Section 10 (1) of the Australian Institute of Marine Science Act, the Minister has power to direct the Institute in matters of a general or specific nature. These powers pertain particularly to the following:

1. granting leave of absence to Council members (Section 13, 16(b));
2. appointing (and terminating such appointment) a person to act as Chairperson (Section 17(1) and (3));
3. appointing (and terminating such appointment) a person to act as a member of Council (Section 17(2) and (3));
4. convening a meeting of Council (Section 20(2));
5. determining terms and conditions of Director's leave of absence (Section 25(2));
6. approving the Director to undertake paid employment outside the duties of his or her office (Section 29(1) and (2));
7. appointing a person to act as Director and determining his or her terms and conditions of appointment (Section 30);
8. approving the appointment of staff who are not Australian citizens (Section 33(2));
9. approving the Institute to enter into a contract involving the payment of Institute funds of an amount exceeding \$100,000 (Section 42);
10. appointing a Committee to assist Council and approving the terms and conditions of members (Section 45);
11. approving the Institute to make available any discovery, invention or improvement in lieu of payment of fees or royalties (Section 48);
12. approving the payment of bonuses for discoveries and inventions by officers and employees (Section 49).

APPENDIX 3 — RESEARCH ACTIVITIES IN THE MARINE DOMAINS OF AUSTRALIA'S EEZ



Source: *Australia's Ocean Policy* and *Australia's Marine Science and Technology Plan*

ALL MARINE DOMAINS

- ☐ Fisheries habitat review
- ☐ The Marine Bioproducts project has collected samples from most of the coast and continental shelf regions in Australia's marine jurisdiction, with the exception of Antarctica. The fully documented and geo-coded collection now includes some 20,000 specimens of micro- and macro-organisms and should be considered a major national research facility.

NORTH EASTERN MARINE DOMAINS

- ☐ Large-scale studies of distribution and abundance of hard and soft corals, fish, sponges, algae, sea floor benthos and plankton (including taxonomy and discovery of biodiversity)
- ☐ Systematic monitoring of selected populations, crown-of-thorns starfish outbreaks, recruitment of corals and fish,
- ☐ Monitoring of river discharges and coastal water quality, contaminant profiles in marine sediments
- ☐ Process studies of water circulation, sediment transport, nutrient exchange, reproduction and the dispersal of spawn (including predictive modelling and data visualisation)
- ☐ Regional climatology supported by automated weather stations, long-term moored instrument arrays, remote sensing observations of sea surface temperature and ocean colour, and historical reconstructions from proxy records in coral skeletons
- ☐ Mangrove ecology, habitat restoration
- ☐ Multidisciplinary science in support of integrated coastal management models and alternative land-use practices
- ☐ Domestication of marine species, environmental impacts of intensive coastal aquaculture
- ☐ Discovery of bioactive molecules through process studies of chemical ecology and eco-physiology
- ☐ Genetic surveys of wild stocks

NORTHERN MARINE DOMAIN

- ☐ Biodiversity of mangrove and coral communities (including relevant taxonomy)
- ☐ Regional climatology supported by remote sensing observations of coastal seas, and historical reconstructions from proxy records in coral skeletons
- ☐ Regional oceanography (hydrodynamic modelling)
- ☐ Genetic surveys of wild stocks

NORTH WESTERN MARINE DOMAIN

- ☐ Large-scale studies of distribution and abundance of hard corals, fish, plankton, mangroves and seagrasses (including relevant taxonomy)
- ☐ Systematic monitoring of selected populations, reproduction and recruitment of corals and fish, recovery from coral 'bleaching'
- ☐ Process studies of water circulation, sediment transport, nutrient exchange, food chain dynamics
- ☐ Regional climatology supported by automated weather stations, long-term moored instrument arrays, remote sensing observations of sea surface temperature and ocean colour
- ☐ Multidisciplinary science in support of integrated coastal management models
- ☐ Genetic surveys of wild stocks

APPENDIX 4 — PUBLICATIONS LIST

JOURNALS / BOOK CHAPTERS / ARTICLES

1. Alongi DM, Johnston DJ, Xuan TT (2000) Carbon and nitrogen budgets in shrimp ponds of extensive shrimp pond-mangrove forestry farms in the Mekong delta, Vietnam. *Aquaculture Research* 31: 387-399.
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2. Crosbie N. Environmental and ecological controls on picophytoprokaroyotes and nano-/microphytoplankton in shelf waters of the central (17°S) and southern (20°S) Great Barrier Reef. PhD Thesis, James Cook University.
3. Dommissie M. The potential nutritional value of detritus fluxing onto coral reefs. PhD Thesis, James Cook University.
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5. McIlwain J. Replenishment patterns of coral reef fish to Ningaloo Reef, Western Australia. PhD Thesis, University of Western Australia.
6. Ramsay M. Influence of oil and bioremediation strategies on mangrove microbial communities. MSc Thesis, James Cook University.
7. Skirving W. Radiometric sea surface temperature in the Great Barrier Reef: Techniques and algorithms. PhD Thesis, James Cook University.

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APPENDIX 5 — TRIENNium AGREEMENT PERFORMANCE INDICATORS

In 1995, AIMS began to trial a set of Performance Indicators as a means of demonstrating the Institute's linkages with users of its research. These performance indicators were established to ensure that external earnings targets did not distort the efforts of the Science Authorities (AIMS, ANSTO and CSIRO) and limit them to a narrow range of their overall functions.

A refined set of indicators was agreed as part the 1997–2000 Triennium Resource Agreement signed between AIMS and the Ministers of Finance and Administration and Industry, Science and Resources. The current Agreement was signed in December 1998.

The indicators included in the 1997–2000 Triennium Resource Agreement are consistent with the Institute's legislative foundation and mission and are a measure of the quality and quantity of the Institute's proposed output: **Research products and services for users of marine resources**. The indicators also reflect the effectiveness of AIMS output, particularly Adoption by Users of Practices, Instruments and Processes Developed by AIMS (Number 7 below).

Indicators in the 1997–2000 Resource Agreement are grouped into areas that reflect major objectives or strategies of government-funded R&D.

☐ **Research and development**

To maintain and encourage the highest level of research (both at the national and international levels) that will meet the future needs of industry and other users, and ensure the effective and efficient use of resources to conduct that research.

☐ **Liaison and collaboration**

To encourage the transfer of research outputs through liaison and collaboration with industry, government and other users (including scientific and general communities).

☐ **Technology transfer and commercialisation**

To encourage and facilitate the application of knowledge and technology developed by the Agency by industry and other users, for the maximum long-term benefit to Australia.

☐ **Customer satisfaction**

To ensure a high level of customer satisfaction.

Achievements against these broad objectives are a measure of the effectiveness of AIMS activities during the reporting period and are detailed in Part B of the Report of Operations. Indicators of performance agreed for this triennium contribute to our proposed outcome: ***Enhanced scientific knowledge supporting the protection and sustainable development of Australia's marine resources.***

I. RESEARCH AND DEVELOPMENT

- 1) Shift of Resources to Agreed Priority Areas
Compare the absolute and percentage change in the level of appropriation expenditure in priority areas over the triennium with AIMS' research priority decisions. Also compare for non-appropriation funds and for total funds. Note, AIMS' research priorities are determined by the AIMS Council.
- 2) Scientific Publications
 - a) Publication level measured by number and categorised by types of publication.
 - b) Number of patents held reported by the number of separate technologies.
- 3) Other
e.g. Distinguished awards, Major prizes, Nomination as host agency by internationally recognised researchers.

II. LIAISON AND COLLABORATION

- 4) Contribution to Australia's Research Future Through Teaching and Training
 - a) Number of postgraduate students supervised by AIMS
 - b) Number of conjoint teaching positions undertaken with universities
- 5) Coordination of research and linkages with decision-making bodies
 - a) Number of collaborations
 - b) Input to policy making and provision of advice

III. TECHNOLOGY TRANSFER AND COMMERCIALISATION

- 6) External Earnings for Research Services, Consistent with the Institute's Mission
External earnings gained as a percentage of total funds
- 7) Adoption by Users of Practices, Instruments and Processes Developed by AIMS
Selection of internally developed practices, instruments and processes adopted by users in industry, government and the community.
- 8) Joint ventures and strategic alliances
A list of joint ventures and strategic alliances, classified by industry sector if this provides additional useful information.
- 9) Spin-off businesses
A list of joint ventures and strategic alliances, classified by industry sector if this provides additional useful information.

IV. CUSTOMER SATISFACTION

- 10) Contracts Successfully Completed
Proportion of contracts completed through milestone achievements against the number of reports due for completion in the financial year.

APPENDIX 6 — GLOSSARY

ACRONYMS

ACIAR	Australian Centre for International Agricultural Research
ACRS	Australian Coral Reef Society
AGSO	Australian Geological Survey Organisation
AIMS	Australian Institute of Marine Science
AMJ	Australian Marine Jurisdiction
AMPTO	Australian Marine Park Tourist Operators
ANZECC	Australia and New Zealand Environment and Conservation Council
ANU	Australian National University
APFA	Australian Prawn Farmers Association
APPEA	Australian Petroleum Production and Exploration Association
BHP	Broken Hill Proprietary
CAMBIA	Center for the Application of Molecular Biology to International Agriculture
CLIVAR	Climate Variability and Predictability project (part of World Climate Research Program)
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DIVERSITAS	IUBS/SCOPE/UNESCO Program on Biological Diversity
DISR	Department of Industry, Science and Resources
EEO	Equal Employment Opportunity
EEZ	Exclusive Economic Zone
FAICD	Fellow of Australian Institute of Company Directors
FCA	Fellow of Chartered Accountants
FCPA	Fellow of Australian Society of Certified Practising Accountants
FIEAust	Fellow of the Institution of Engineers, Australia
FOI	Freedom of Information
FRDC	Fisheries Research and Development Corporation
FTSE	Fellow of the Australian Academy of Technological Sciences and Engineering

GBRMPA	Great Barrier Reef Marine Park Authority
GBRWHA	Great Barrier Reef World Heritage Area
GCRMN	Global Coral Reef Monitoring Network
ICLARM	International Centre for Living Aquatic Resource Management
ICRI	International Coral Reef Initiative
IUBS	International Union for Biological Sciences
JCU	James Cook University
NGO	Non-Government Organisation
NHT	National Heritage Fund
NOAA	National Oceanic and Atmospheric Administration
NOAG	National Oceans Advisory Group
OECD	Organisation for Economic Cooperation and Development
OHS&E	Occupational Health, Safety and the Environment
PCT	Patent Cooperation Treaty
QCFO	Queensland Commercial Fishermen's Organisation
QDPI	Queensland Department of Primary Industries
QFMA	Queensland Fisheries Management Authority
SOMER	State of the Marine Environment Report
SCOPE	Scientific Committee on Problems of the Environment
SCOR	Scientific Committee on Reefs
TOPEX/ Poseidon	Ocean Topography Experiment. A mission to map sea surface heights using two altimeters. TOPEX is the name of the US portion of the mission. Poseidon is the name for the French component.
TROPICS	Tropical River-Ocean Processes In Coastal Settings
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNCED	United Nations Conference on Environment and Development
WESTPAC	Intergovernmental Oceanographic Commission program group for the Western Pacific

GLOSSARY OF TERMS

Agrochemical: artificially produced chemical used in modern, intensive agriculture systems

Anoxic: without oxygen.

Biofilter: biological filter.

Biogeographic: relating to large regions with distinct landscapes/seascapes, flora and fauna (*Australia's Oceans Policy*, 1998).

Biological Diversity: the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Convention on Biological Diversity, June 1992).

Clients: users of marine science and technology including, the Australian community, regulators and government, marine industries, policy developers, other researchers, educators and students.

Connectivity: reproductive links among separated populations.

Database: data or information organised in categories to facilitate retrieval and analysis, now commonly in electronic form.

El Niño: climatic conditions caused by unusual eastward currents in the equatorial Pacific Ocean, characterised by higher sea surface temperatures in the Indian and eastern Pacific Oceans, bringing drought to Australia and seasonal climatic anomalies to many countries of the world (*Australia's Marine Science and Technology Plan*, 1999).

ENSO: El Niño-Southern Oscillation.

Ecosystem: a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit (Convention on Biological Diversity, June 1992).

Microorganism: living organism not visible to the naked eye e.g. bacteria, marine fungi and diatoms.

Macroorganism: visible organisms - in the context of this report, algae, sponges and fish.

Modelling: numerical techniques and computer technology are used to develop a schematic description of a system or phenomenon that accounts for its known properties and can be used for further study of its characteristics.

Monitoring: routine counting, testing or measuring, environmental factors or biota to determine their status or condition and to assess changes over time (*Australia's Oceans Policy*, 1998).

Outcome: the result, impact or consequences of actions by AIMS on the community (DOFA definition for accrual budgeting).

Output: the goods and services produced by AIMS (DOFA definition for accrual budgeting).

Planulae: young free-swimming coral larvae.

Pollution: The introduction by humans, directly or indirectly, of substance or energy into the marine environment, which results or is likely to result in such deleterious effects as to harm living resources and marine life, be hazardous to human health, hinder marine activities, or impair the quality of sea water and reduce amenities (SOMER, 1995).

Ramsar Convention: Convention on Wetlands of International Importance Especially as Waterfowl Habitat.

Strategic basic research: experimental and theoretical work undertaken to acquire knowledge directed towards specified broad areas in the expectation of useful discoveries. It provides the broad base of knowledge necessary for the practical solution of recognised problems (Industry Commission definition, 1994).

APPENDIX 7 — AIMS SCIENTISTS' MEMBERSHIP OF GOVERNMENT COMMITTEES AND NGOS

	97/98	98/99	99/00
International Forums			
Panel of Experts on Access and Benefit Sharing, CBD (Aust. Rep.)			X
Coral Reef Degradation in the Indian Ocean (CORDIO) Project, Steering Committee			X
Coral Reef Research Advisory Committee, Japan			X
Diversitas – Scientific Steering committee	X	X	X
GMS Pathfinder Committee (NASA)			X
ICLARM, Aquatic Environments Program, Scientific Advisory Committee	X		
International Association for Genetics in Aquaculture (Executive)		X	X
International Coral Reef Initiative - Co-ordination and Planning Committee	X	X	X
International Society for Reef Studies (Executive)		X	X
IUBS, Committee on Reproductive Biology in Aquaculture		X	X
Packard Foundation, Biodiversity Project for Western Pacific, Steering Committee	X	X	X
Royal Society of New Zealand Standing Committee for Environmental Research	X	X	
SCOR Working Group on Coral Reefs and Global Climate Change		X	X
SCOR Working Group on Muddy Coasts and Sea Level Rise		X	X
Steering Committee, EURESCO Conferences on Marine Coastal Biodiversity			X
Domestic Forums			
AATSR, Scientific Advisory Group (NASA)			
Australian Academy of Sciences, CLIVAR sub-committee	X	X	X
Australian Academy of Sciences, Oceans Board		X	
Australian Coral Reef Society (Executive)	X	X	X
Australian Ocean Colour Working Group	X	X	X
Australian Research Council (ARC)			X
Commonwealth Committee for Atmospheric and Ocean Studies	X	X	X
Commonwealth Committee for Marine Protected Areas	X	X	X
Commonwealth IDC on access to biodiversity and benefit sharing	X	X	X
Commonwealth State of the Environment Report, Steering Committee		X	X
CRC Aquaculture (Board)	X	X	X
CRC Reef Board	X	X	X
CRC Reef Executive	X	X	X
CRC Reef Scientific Advisory Group	X	X	X
CRC Reef Task Review Committee	X	X	X
Dry Tropics Aquaculture Advisory Group		X	
Expert Reference Group Supporting the National Inquiry into access to Biological Resources in Commonwealth Areas			X
Fisheries Research and Development Corporation	X	X	X
GBRMPA Representative Areas Program (working group)		X	X
Industry Commission on Ecologically Sustainable Land Management		X	
Industry Research and Development Board (IR&D Board)			X
Marine Science Advisory Group	X	X	X
National facility (ORV Franklin), Scientific Advisory Committee		X	X

	97/98	98/99	99/00
National Oceans Advisory Group		X	X
QDNR Water Allocation Management Plan, Technical Advisory Panel		X	X
QFMA – HarvestMac (science adviser)	X	X	X
QFMA – ReefMac (science adviser)	X	X	X
QFMA – Townsville ZAC (science adviser)	X	X	X
Regional Consultative Group for the Wet Tropics Region Coastal Management Plan			X
Sugar Industry Infrastructure Review		X	
Task Force for Marine Protected Areas	X	X	X
WA CALM, Marine Parks and Reserves Scientific Advisory Committee			X
WA Dept of Environmental Protection, NWS Joint Environmental Management Study, Steering Committee		X	X
WA Dept of Environmental Protection, NWS Joint Environmental Management Study, Advisory Committee		X	X
Western Australian Physical Oceanographic Coordinating Group (WAPOCG)		X	X

INDEXES

COMPLIANCE INDEX

This Annual Report has been prepared using the *Commonwealth Authorities and Companies Orders 1998*. Some of the items included in the *Requirements for Departmental Annual Reports* have been included where relevant and/or where they improved access and readability of the report.

Alphabetical index	116
Audit Committee	44
Certification	20
Compliance index	115
Contact details	ii
Council members (Directors)	40
Customer Service charter	51
Developments since the end of the financial year	39
Enabling legislation and responsible Minister	40
Financial statements	53
Freedom of Information (FOI)	51
Functions of AIMS	89
Glossary	108
Governance	40
Indemnities and insurance premiums for officers	47
Judicial decisions and reviews by outside bodies	48
Letter of transmission	iii
Ministerial directions	40
Mission	1
Occupational Health, Safety and the Environment (OHS&E)	50
Operational and financial results	28
Outline of structure	43
Performance Indicators	28
Powers of the Institute	89
Review of Operations and future prospects	21
Social justice and equity	49
Staff Consultation (Industrial Democracy)	50
Staffing Overview	45
Table of Contents	v
Workplace Diversity (see Social Justice and Equity)	49
YR 2000	51

ALPHABETICAL INDEX

About this report	iv
AIMS Council	28, 46, 107
Australian Centre for International Agricultural Research (ACIAR)	17, 36
Australian Marine Park Tourist Operators (AMPTO)	32
Australian Nuclear Science and Technology Organisation (ANSTO)	32, 83, 106
Australian Petroleum Production and Exploration Association (APPEA)	41
Australia's Chief Scientist	21
Australia's Marine Jurisdiction (AMJ)	21, 26, 91
Behaviour	48
Broken Hill Proprietary Ltd (BHP)	13
CAMBIA	31
Chairman and Members	40
Clients	7
Community involvement	36
Commonwealth Scientific & Industrial Research Organisation (CSIRO)	24, 32, 34, 41, 42, 83, 106
Compliance Index (Appendix 1)	115
Convention on Biological Diversity (CBD)	31
Coral 'bleaching'	3, 9, 10, 26, 33, 35, 92
Corporate Governance	45, 48
CRC for Aquaculture	32, 84
CRC for the Great Barrier Reef World Heritage Area	7, 24
Department of Industry, Science and Resources (ISR)	7, 42
Department of Primary Industries, Queensland (DPI)	32
Developments since the end of the financial year	39
Equal Employment Opportunity (EEO)	49
Exclusive Economic Zone (EEZ)	2, 21, 91
Executive Committee	44, 45, 47
External earnings	37
Fisheries Research and Development Corporation (FRDC)	34, 36, 42, 112
Fraud control	47
Freedom of Information (FOI)	51, 87, 88
Functions of AIMS (Appendix 4)	89
Great Barrier Reef Marine Park Authority (GBRMPA)	3, 11, 13, 32, 33, 35, 36, 41, 112
IBM International Foundation	30
Industrial Democracy	115
Infrastructure	23, 58, 63, 65, 67, 83, 113
Institute structure	40, 43, 45, 87
International Society for Reef Studies	30
James Cook University	12, 13, 15, 24, 25, 31, 38, 42
Marine Science and Technology Plan	21, 26, 91, 110
Ministerial Powers of Direction (Appendix 3)	91
Mission	1, 46, 48, 106, 107

National context	21
Occupational Health, Safety and the Environment (OHS&E)	50
Oceans Policy	26, 34, 110
Ord River estuary	17
Patents	29
Powers of the Institute (Appendix 2)	89
Project TROPICS	14, 33
Queensland Fisheries Management Authority (QFMA)	113
Queensland state government	39
Research Focus	2
Human Impacts on Coastal Marine Ecology	2, 85
Sustaining Coral Reefs	3, 85
Monitoring Change in Tropical Marine Biota	3, 85
Marine Biogeochemistry of Contaminants	3, 85
Supporting Tropical Fisheries	4, 85
Predicting the Coastal Marine Environment	4, 85
Marine Biotechnology: Mariculture, Biodiversity and Genetics	4, 85
Marine Bioproducts	4, 85
Research Plan	ii, iv, 2, 5, 9, 26, 28, 87
Rhodes Scholarship	31
Status reports	36
Strategic Directions (AIMS research)	iv, 2, 5, 48, 87
Ecologically sustainable development	2
Marine biodiversity	2
Marine living resources	2
Technological innovation	2
The ocean environment	2
Teaching and training	32
Triennium Agreement Performance Indicators (Appendix 5)	106
UV blocking compound	29
WA Department of Conservation and Land Management (CALM)	33, 113
WA Department of Environment Protection (DEP)	32
WetPC Pty Ltd	29
Workplace Diversity	49

