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**AUSTRALIAN INSTITUTE  
OF MARINE SCIENCE**



AUSTRALIAN INSTITUTE OF MARINE SCIENCE

**annualreport**

04/05

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

For additional copies of this report, please phone the Institute on 07 4753 4444, write to us at our Townsville address or email [bookshop@aims.gov.au](mailto:bookshop@aims.gov.au)

This report, along with a range of other information about the Institute, is available on-line at [www.aims.gov.au](http://www.aims.gov.au)

Cover photo: A baited camera sled was used to survey the seabed close to the location of sediment trap deployments in the Cartier Trough during the *RV Southern Surveyor* field trip in June 2005. At a depth of 510m, the seabed at the location of the first deployment was observed to be composed of fine silt sediment with no sedentary macrobenthic organisms. Ophiuroid starfish (featured on the cover of this report) appeared soon after the sled landed, lured by the bait canister. An unidentified snake eel, galethaid squat lobster and penaid prawns were also observed (Photo: M. Rees).

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5th September 2005

The Hon Dr. Brendan Nelson  
Minister for Education, Science and Training  
Suite MF24  
Parliament House  
CANBERRA ACT 2600

Dear Minister

On behalf of the Council of the Australian Institute of Marine Science, we have pleasure in presenting the Institute's 33rd Annual Report for the year ended 30 June 2005. 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 output can make an informed judgment about AIMS' performance during the 2004-2005 financial year.

The report has been prepared in accordance with the Commonwealth Authorities and Companies (Report of Operations) Orders and the Commonwealth Authorities and Companies (Financial Statements 2004-2005) Orders. The Council endorsed the content of the Annual Report by a resolution at its meeting of 5 September 2005.

Yours sincerely



Ian Gould  
Chairman  
Australian Institute of Marine Science



Dr. Ian Poiner  
Chief Executive Officer  
Australian Institute of Marine Science

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# About AIMS

The Australian Institute of Marine Science is one of the most innovative and progressive research laboratories in the world with unparalleled capability in the field of cutting-edge tropical marine science and technology.

AIMS was established by the Australian Government in 1972 under the *Australian Institute of Marine Science Act 1972* in recognition of the importance of marine assets, especially the Great Barrier Reef, to Australia. Today AIMS is recognised worldwide for the quality of its research into marine environments, and their resources including biotechnology and aquaculture.

## OUR ROLE

AIMS' mission is to conduct innovative research that advances understanding of our oceans and coastal ecosystems, facilitates good stewardship of marine resources, develops sustainable wealth creation opportunities, and contributes to the discovery and development of new marine-based bioproducts for industry and human health.

To do this, AIMS surveys and documents marine life – from the coast to the edge of the continental shelf; monitors changes and identifies trends in the marine environment; and searches the seafloor for novel compounds that can be used to develop pharmaceuticals, health care products, crop protection agents, and applications for environmental remediation. The organisation is also developing aquacultural techniques for the production of food, materials and fine chemicals.

AIMS has an active programme for patenting and commercialising technologies developed within the Institute, including those developed in conjunction with academic or commercial partners. AIMS takes seriously its responsibility to transfer its intellectual property to users.



Photo: S. Clarke

## OUR PEOPLE

AIMS is home to a dynamic team of 167 scientists and research support staff who provide specialised skills across three research groups and in the areas of Data Management, Information Technology, Engineering, Field Operations, Information Services, Science Communication and Corporate Services. Many of our scientists are world authorities in their field and have achieved international acclaim for their research.

## OUR LOCATION

AIMS headquarters is ideally located on a 170 hectare coastal site 50 km from Townsville, in a scientific zone surrounded by National Park and Marine Reserve. The location was selected because of its proximity to the geographical centre of the Great Barrier Reef and access to clean seawater. This strategic position provides a fast transition from the sea to the lab, a key advantage in the field of marine science. Two smaller offices, in Fremantle, Western Australia and Darwin, Northern Territory, provide direct links for research partners and clients in these regions.

The Institute's expertise is engaged throughout Australia's ocean territory, from tropical northern Australia to the Antarctic, and in tropical waters worldwide. National and international research partnerships and collaborations enhance AIMS' capacity and influence well beyond Australia's shores.

## OUR FACILITIES

At its Townsville headquarters, AIMS uses modern research laboratories, manufacturing workshops, and a state-of-the-art Biomolecular Analysis Facility that allows for fast and accurate investigations into molecular structures and chemical relationships specific to the marine environment.

A research fleet comprising two ships, the *RV Lady Basten* and the *RV Cape Ferguson*, and several smaller boats provide both access to all Australian marine environments and the capacity for cutting-edge oceanographic studies. During 2004-2005, the ships supported 46 research expeditions averaging 274 days at sea.

## OUR RESEARCH

Put simply, AIMS finds out what's out there, how it works, develops knowledge to protect it and benefit from it. The Institute's expertise in tropical marine ecosystems combined with a multidisciplinary capability enables the full spectrum of scientific investigation to take place, from the seafloor to the lab bench. Using a collaborative approach, AIMS further enhances its capacity and capabilities ensuring maximum effort to improve our understanding of our complex marine ecosystems.

Specialised infrastructure supports our research capabilities which include coral reef ecology; water quality; biodiversity assessment; coastal oceanography and modeling; coastal ecosystems and sustainable development; climate change and impacts; long term monitoring and datasets; tropical aquaculture; systematics; marine microbiology; marine natural products chemistry; marine physiology; evolutionary biology; and functional genomics.

# Highlights

- ▶ Researchers tail whale sharks beyond Ningaloo
- ▶ Ancient mangrove forests discovered under reef
- ▶ AIMS@JCU - A model partnership
- ▶ AIMS helps tsunami recovery
- ▶ Deadly stingers identified
- ▶ Open Day 2005
- ▶ Expedition reveals methane bubbling from the Timor Sea
- ▶ Climate change and the Great Barrier Reef
- ▶ Cloning marine DNA to supply 'drugs from the sea'
- ▶ Molecular and microbiological approaches to track environmental degradation
- ▶ Mixing models aid reef conservation world-wide
- ▶ Reef chorus strikes a chord with baby fish





Photo: B. Bennett

*AIMS' biogeochemist Dr Gregg Brunskill and oceanographic technician Cary McLean use a 'bubble catcher' to sample methane bubbles rising from a submarine seep on the seafloor of the Timor Sea. A small half square kilometre patch of seafloor seepage was delivering about 1 tonne per day of greenhouse methane to the atmosphere, from several kilometers beneath the seafloor.*



## Researchers tail whale sharks beyond Ningaloo

AIMS' scientists studying the little known whale sharks that gather at Ningaloo Reef off Western Australia have tagged six animals with new satellite-tracking technology, making it the most successful tagging season yet.

New "SPLASH" tags fitted in May 2005 have logged information on location, swimming depth and water temperature at one minute intervals. The tags transmit summary data at six-hourly intervals via polar-orbiting satellites fitted with ARGOS receivers and are expected to have an 18-month lifespan. This type of tag is more accurate and long-lasting than previous tags used on whale sharks and have allowed researchers to follow the tracks of these animals out in the open ocean in real time, by downloading the information from the satellite to a computer.

AIMS, CSIRO, the United States National Oceanic and Atmospheric Administration's Pacific Islands Fisheries Science Center, Hubbs-SeaWorld Research Institute (California), the WA Department of Conservation and Land Management, the Australian Government's Department of the Environment and Heritage, BHP Billiton Petroleum, Woodside Energy and Chevron are partners in the research.

Other research using photographs taken over the last 12 years (1992-2004) has enabled AIMS' scientists to identify distinctive patterns and markings on individual whale sharks. With the help of Charles Darwin University (CDU) in the Northern Territory, population estimates have been established using computer models.

This study estimates the Ningaloo aggregation at approximately 670-1300 individuals with many of the same animals returning to cruise the coast of Ningaloo in successive years. The number of sharks suggest they are more vulnerable than scientists had anticipated.

Improved knowledge of the movement patterns of the whale sharks will form the basis of wise management and conservation plans for this species in Australia, and assessment of likely impacts from overseas fisheries.

*AIMS' scientists are using satellite technology to track the whale sharks that visit Ningaloo Reef in Western Australia.*



Photo: G. Taylor

## Ancient mangrove forests discovered under reef

AIMS' researchers have opened a window into the past by exposing ancient mangrove forests entombed beneath the GBR. These preserved mangroves, older than mummified Egyptians, have revealed an abrupt rise in sea levels – possibly 20 times faster than the most conservative global warming prediction.

Knowing how rapidly the seascape changed in the past will help scientists predict future changes associated with global warming. The evidence will also help to establish the state of the reef, such as nutrient and sediment levels, as it existed prior to human activity.

Researchers say the remnant mangroves indicate that sea levels on the GBR swelled by about 3 m in as little as 30 years after the last Ice Age, overturning the long-held belief that waters rose gradually over the past 9,000 years.

Scientists were surveying the impact of nutrients on coastal inshore areas when they unearthed these mangrove forests in old river channels that they believe may snake for 30 km to the edge of the continental shelf.

While it was previously known that beneath the GBR there are relic riverbeds, formed when the continental shelf was dry land, their significance was never studied. When scientists took the first samples they thought it was cyclone debris, but it was far too deep (70 cm below the surface of the present seafloor) to be a modern event.

The mangrove was incredibly well preserved – probably because of the antibiotic properties in the concentrated tannins. Within the cores were intact root systems and parts of trees, including twigs and branches that radio carbon dating put between 8,550 and 8,740 years of age.



Photo: L. Trott

*Cross-section of a mud core containing the remnants of ancient mangrove plants.*

## AIMS@JCU – A model partnership

The joint venture agreement between AIMS and James Cook University (JCU) is now one year old, and with the investment in infrastructure, appointment of management, awarding of scholarships to AIMS@JCU post-graduate research students, and enhanced research collaboration, it is steadily gaining momentum.

Bringing together in a formal research relationship, organisations with a long history of collaboration on marine issues, AIMS@JCU is an unprecedented opportunity for Australia to continue to build capability in tropical marine science. The partnership builds on the largest concentration of tropical marine scientists in the world and is furthering both the development of Townsville as a world-class centre of excellence for research and teaching in marine science, and Australia as the world leader in tropical marine science. The Australian government has provided \$3.9 million towards facilitating the AIMS@JCU. A significant aspect of the joint venture was the commissioning of a state-of-the-art fibre-optic communication link between the AIMS and JCU facilities that enables 'virtual' in-lab collaboration, and also improves interactive relationships with other universities. The link will allow the transfer of field observations from 'digital skins', or sensors, back to the data centre as they happen. This is cutting-edge technology that will revolutionise north Queensland's marine research capacity.

The appointment of a Board, an Executive Officer and part-time administrator has moved the collaboration from concept to working reality. Work is now focused on the joint venture's first two programmes, Aquaculture and Coastal Processes and Marine Modelling. Aquaculture facilities at AIMS are being enhanced, and five post-graduate research scholarships have been awarded.

*AIMS CEO Dr Ian Poiner, James Cook University Vice Chancellor Professor Bernard Moulden and JCU student Neal Cantin (AIMS@JCU postgraduate student) in a laboratory at AIMS.*

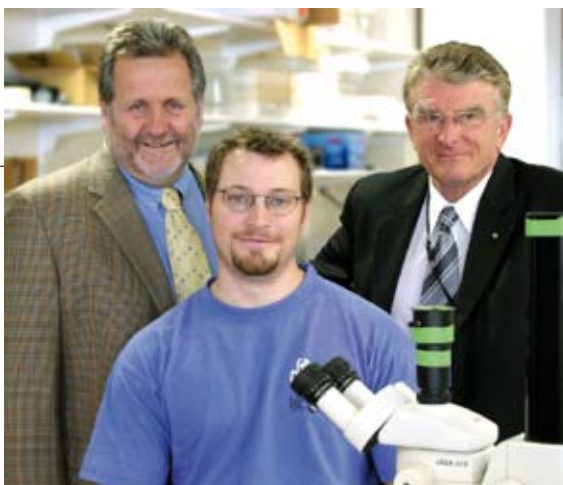


Photo: T. Simmonds

## AIMS helps tsunami recovery

AIMS' expertise in mangrove and coral reef assessment and management was enlisted to assist the Maldives and Thailand after the tsunami of December 2004.

As part of Australia's response, three AIMS researchers visited the Republic of the Maldives to conduct rapid assessment of reef health following the tsunami, and assessed its impact on the geology of some islands and on shallow-water bait fisheries.

It found that the tsunami had limited impact on the reefs or bait fishery. The most important reef effect of the tsunami may be to retard the ongoing recovery from the severe coral bleaching experienced in the Maldives in 1998; fine sand deposited on the recovering reefs could bury and kill recently established coral colonies and make areas of rock unsuitable for coral settlement.

AIMS' researcher Dr Clive Wilkinson, at the request of the Prime Minister of Thailand, was appointed by the United Nations Development Programme to assess reef damage and provide advice on rehabilitation, with a focus on tourism and fishing.

As coordinator of the Global Coral Reef Monitoring Network (GCRMN), Dr Wilkinson will take a leading role in the preparation of an addendum to the December 2004 *Status of Coral Reefs of the World: 2004* on the impacts of the tsunami. This will include advice on rehabilitation and management.

A survey team of the world's most accomplished coral reef scientists, including AIMS' Dr Charlie Veron, joined the 14-day National Geographic's Tsunami Coral Reef Damage Expedition to assess reef damage in Phuket, Thailand. This survey will provide a baseline from which recovery of the reefs can be monitored.



Photo: W. Salter/AusAID

*A member of the team examines the state of the coral reef at Mulaku Atoll near Kolhu Fushi.*

## Deadly stingers identified

New DNA analysis has revealed two categories of the potentially deadly Irukandji box jellyfish, or 'stinger'. The most dangerous of the two appears to prefer inhabiting offshore waters around reefs and islands.

Collaborative research between AIMS and JCU has found that Irukandji fall into two evolutionary groups, the *Carukia*, which includes *Carukia barnesi*, and the 'pseudo-Irukandji'. This coincides with patterns derived from independent analysis of morphology, and with preliminary observations of behaviour and distribution, in which the *Carukia* group is found inshore and the other offshore. This finding will significantly influence most areas of Irukandji research and management, with the two groups being treated as functionally and ecologically different. Specifically, research will shift toward the assessment of distinct inshore and mid-shelf populations, and toward the study of the ecology and behaviour of solitary instead of swarming species. There is likely to be a renewed emphasis on determining the species boundaries within the Irukandji groups.

This research will benefit people living in and visiting tropical Australia, and those associated with the tourism industry, because the common Irukandji, found nearshore, is not generally thought to be lethal (although it can cause severe systemic symptoms).

In other collaborative research by this team a new species of jellyfish from the GBR has been discovered and named *Spectacularia vanoppeneae* after AIMS' scientist Dr Madeleine van Oppen.

*Carukia barnesi*,  
one of the known  
Irukandji Syndrome-  
causing jellyfish on the  
Great Barrier Reef.



Photo: L. Gershwin

## Open Day 2005

Open Day 2005 was the biggest public event on the Institute's record. Roughly 7,500 people made the most of the opportunity to explore the Institute's facility, meet its scientists, see their work and learn of its value firsthand. AIMS was delighted by the response and thrilled to share its discoveries and successes with so many supportive people. A fascinating range of marine research was showcased, new technologies were demonstrated, and state-of-the-art laboratories were opened to the community.

Static and interactive displays were aligned with three central themes - *Healthy Reef*, *Marine Biotechnology*, and *Science Innovation and Technology*. The themes highlighted how the ocean is brought to the lab and put through a rigorous process of scientific investigation, how innovative techniques are employed and how instrumentation is devised specifically for marine exploration and data collection. *RV Cape Ferguson* proved to be a major drawcard.

A series of lectures ran throughout the day featuring an impressive line up of leading marine scientists, including the world's most eminent authority on coral, Dr Charlie Veron.

Her Excellency Ms Quentin Bryce, AC, Governor of Queensland, and Mr Bryce were among special guests who took the time to discover AIMS.

Two thirds of AIMS' 167 staff volunteered to help run the event, illustrating their commitment to their work and to sharing their passion for the environment. An additional 50 volunteers, including JCU students, members of local community service organisations, as well as the Institute's public tour guides, assisted on the day.

Open Day 2005 was a resounding success, with positive feedback coming from a variety of sources, including local community members who reiterated their interest in and appreciation of AIMS research.



Photo: S. Tobin

*Crowds started to build early on Open Day.*



## Expedition reveals methane bubbling from the Timor Sea

Pioneering research in the Oceanic Shoals bioregion, which extends across the top of Australia's marine territory in the Timor Sea and down the west coast to the Rowley Shoals west of Broome, has observed for the first time seeps of natural gas streaming to the surface from the seafloor in 90 m water depth, about 300 km north of Broome. Underwater cameras revealed gas and fluid squirting from the seafloor, and bubbles of the gas were directly collected as they rose to the surface and analysed, with surprising results – they are virtually pure methane (99%) laced with other hydrocarbons.

This finding has implications for global warming since methane is 20 times more powerful than CO<sub>2</sub> as a heat-trapping greenhouse gas. It is believed these seeps may occur throughout the continental shelf of this remote region which has proven to be a biodiversity hotspot.

The observation of active seeps builds on new knowledge being developed by a multidisciplinary effort team to describe and map biodiversity and to pursue the question of the role that hydrocarbons might play in the natural environment of one of Australia's largest oil and gas provinces. Researchers have also discovered dense patches of coral reef and expanses of *Halimeda* algae to around 60 m depth on many of the submerged shoals. Fish communities are diverse, many observed for the first time in Australian waters, and important commercial fish species were found to be abundant in deeper water.

A better understanding of how oily hydrocarbons and methane influence marine life will contribute to wise management of this resource rich region.

*A commercially important Scampi, carid shrimp and numerous brittle stars show their true colours when captured on camera in 410 m of water near the Sahul Banks, Timor Sea.*



Photo: M. Rees



## Climate change and the Great Barrier Reef

While the GBR has been identified as the best-protected and best-managed coral reef ecosystem in the world, it is still vulnerable to the global 'enhanced greenhouse' phenomenon. Although average water temperatures of the GBR have increased only 0.5°C since the late 1800s, the GBR suffered major bleaching events in 1998 and 2002 linked to unusually warm waters in summer.

Bleaching thresholds vary along the GBR but the threshold for coral mortality is approximately 1°C higher than the bleaching point. Hydrodynamic processes play an important role and have been shown to make some areas consistently cooler and therefore less susceptible to bleaching. An understanding of this spatial variation using satellite sea surface temperature (SST) data (in collaboration with NOAA) enables scientists to predict areas most at risk of warming and possible bleaching.

Studies on massive coral cores from inshore and midshelf reefs revealed growth hiatuses coinciding with major bleaching events in 1998 and 2002. These appear unprecedented in coral growth histories over the past several centuries. Some coral species may be able to respond to warmer waters by changing their algal symbionts to more thermally tolerant species. This is being tested as the possible cause for this change in growth associated with the bleaching events.

Modelling of future impacts suggest that a 1-3°C increase in GBR water temperatures, predicted for the end of this century, would result in ~80-100% bleaching of the GBR, compared with ~50% in 1998 and 2002. To maintain current levels of hard coral cover on the GBR corals would need to increase their heat tolerance limits by 0.1°C per decade. Even with adaptation, this may not help them acclimatise fast enough to match the most conservative projected temperature rise.



Photo: R. Berkelmans

*Investigations are being conducted into the capacity of corals to acclimatise to warmer water. Some colonies possess the ability to change the balance of zooxanthellae type in their tissues, leading to increased thermal tolerance.*

## Cloning marine DNA to supply 'drugs from the sea'

AIMS' scientists, in strategic collaboration with the University of Aberdeen and the University of London School of Pharmacy (ULSOP), have cloned DNA from marine resources into the bacterium *E.coli* in a bid to obtain a sustainable supply of potentially very significant new drug leads from the sea.

Compounds from marine organisms like sea squirts and sponges show exceptional promise for the treatment of cancer, inflammation and viral diseases, but obtaining a large-scale supply of these complex chemicals for worldwide use has been environmentally unsound and economically unviable. For example, to produce a cancer-fighting drug from a marine source like a sponge it is estimated that 20,000 tonnes of a particular species might need to be harvested each year to meet the global market need.

This research team has been the first in the world to succeed in providing a solution by transferring the DNA responsible for producing a cancer-fighting chemical produced by a seasquirt, and placing the biosynthetic genes in an easy-to-culture bacterium, which produces the chemical by microbial fermentation. Scientists need only one small collection of the seasquirt to obtain an indefinite supply of the chemical, which has potential for the treatment of certain types of lymphoma.

This work has been described as one of the most important breakthroughs in marine biotechnology in recent times and heralds a bright future for the development of drugs from the sea. All elements of this work were performed at AIMS.

*Drs. Paul Long (ULSOP) and Walt Dunlap (AIMS) examine E.coli colonies cloned with marine DNA.*



Photo: W. Ellery

## Molecular and microbiological approaches to track environmental degradation

World-first research focusing on the integration of genomic, chemical and microbiological ecology is shedding light on the ability of coral reef organisms to cope with environmental change and helping to explain population level effects. Some of the world's most advanced molecular techniques are being used by AIMS' scientists to examine the effects of pollution, temperature and disease on corals, sponges and microbial symbionts and to identify sensitive indicators for these critical stressors.

Research has found that coral larvae in search of an appropriate recruitment surface have evolved to detect molecular settlement signals, guided by a more ancient organism – calcareous algae. This discovery allows researchers to explore the processes that lead to larval metamorphosis, to determine the disruptive effects of human induced stress, and to artificially enhance recruitment of corals on degraded reefs.

In another world first, researchers have identified the common bacterial pathogens causing the most recognised afflictions infecting corals of the GBR and Indo-Pacific, Black Band and Red Band Disease. These findings help scientists understand how environmental stress leads to outbreaks of coral disease, and enable better-informed environmental management and prediction.

State of the art physiological, molecular and genomic techniques have been used to examine the effects of pollution stress on corals and sponges collected from ship grounding sites on the GBR and remarkably polluted sites near Antarctic research stations. Microbial populations contained within sponges and on the surface of the ocean floor were correlated with high levels of shipping antifoulant, hydrocarbon pollutants, and heavy metal contamination. This research complements ongoing studies to determine how the biotic stress of contamination from land runoff and shipping can affect tropical microbial communities critical to reef function and regeneration (see NRP Outcomes, p 41).



Photo: C. Wolf

*The bioactive Antarctic sponge Kirkpatrickia varialosa contains a novel and diverse microbial community that may provide a sensitive indication of environmental stress.*

## Mixing models aid reef conservation world-wide

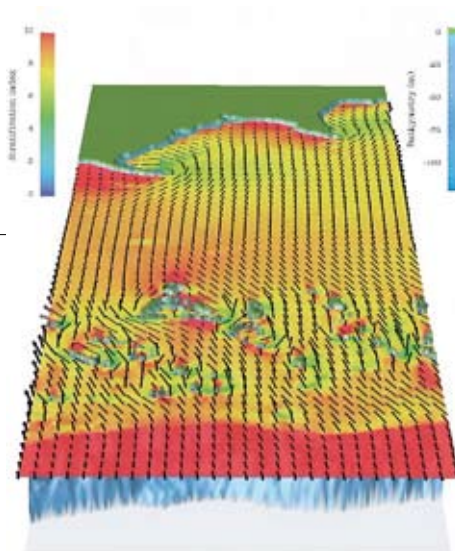
AIMS interdisciplinary research capability in coral reef system ecology and oceanography has enabled major advances in understanding the physical processes responsible for the spatial patterns or patchiness observed during mass coral bleaching.

Initial research on the GBR used a combination of hydrodynamic, thermodynamic and bathymetry models to explain how reef generated mixing is responsible for the complex patterns seen in satellite sea surface temperature images during coral bleaching events. For example, cooler surface waters are often found in areas where reefs and islands stir the water column sufficiently to mix cooler deep water up to the surface.

The approach developed on the Great Barrier Reef (GBR) was tested and validated at Scott Reef, an isolated coral reef in north-western Australia which suffered severe coral bleaching in 1998. Using the resources of the Institute's state of the art oceanographic instrument pool, an intensive observational study of the circulation and water column thermodynamics was undertaken providing a unique data set to confirm the observed reef-scale patterns of coral-bleaching.

This research provides a better understanding of the natural variability of the status of coral reefs, and their susceptibility to bleaching, in Australia's Exclusive Economic Zone (EEZ), and is now being adopted by other organisations and applied at coral reef locations world wide. AIMS has teamed up with NOAA and The Nature Conservancy to employ this research technique in Palau to identify areas more vulnerable to coral bleaching and enable better design of Marine Protected Areas.

*Visualisation of a numerical model of the central Great Barrier Reef showing currents (arrows) and the intensity of reef-induced mixing (colour).*



## Reef chorus strikes a chord with baby fish

Research has shown that sound is instrumental in attracting fish larvae to settle on reefs. This research which was published in the prestigious journal 'Science', has shown for the first time that reef fish not only locate settlement sites using reef sounds but also discriminate between sounds.

The work explains how baby fish (only a few millimetres long) that are swept off the reef as larvae out to open seas manage to find their way back again as juveniles, some swimming many kilometres.

Sound travels in water irrespective of current flow, and reef animals, especially fish, create a clamour that can be heard up to 15 km around a reef. At dusk and dawn, the cacophony of marine noise reaches a crescendo. Experiments were designed to test whether reef sounds direct the settlement behaviour of reef fish recruits and were carried out off Lizard Island in Queensland's far north. Recordings of underwater reef noises were made, mostly the sound of snapping shrimp and fish calls, then broadcast through submersible speakers above small patch reefs made from dead coral rubble.

Species from 11 families including damselfish and cardinal fish tuned in to the sound recordings. There was a preference for the noisy reefs - in some instances four times as many recruits arrived. Some of these species preferred reefs where there was high frequency noise like snapping shrimp, while others simply appeared to be attracted to any sound.

This important use of sound at this critical life history phase does raise the possibility of potential adverse effects of increasing anthropogenic noise pollution but also may lead to the development of new tools for fisheries managers for restocking fisheries or newly established marine reserves.



Photo: V. Bates

*Young fish, like this juvenile black and white seaperch, return from oceanic nurseries to coral reefs by homing in on biological sounds.*

## Performance at a glance

AIMS continues to provide relevant, high quality research in support of the protection and use of Australia's marine biodiversity. This research directly supports Australian and State Government initiatives (e.g., *Australia's Oceans Policy*, the National Research Priorities, the *Reef Water Quality Protection Plan*, the *Great Barrier Reef Representative Areas Programme*, the development of access and benefit-sharing policy, and the sustainable development of Darwin Harbour); the needs and priorities of industry (e.g., reduced risk and identification of new marine resource opportunities for industry and tropical aquaculture); and community aspirations (e.g., identification and protection of Australia's marine biodiversity).

To deliver maximum benefit from its research AIMS continues to apply a collaborative approach which builds capacity and coordinates effort. Through leadership in tropical marine science, effective collaboration and maintenance of strong and effective networks that extend across all States and Territories, and overseas, AIMS also ensures a high profile for Australia and enhances the nation's capacity to capture benefit from investment in marine science and technology.

The Institute measures its performance against indicators agreed in our Triennium Funding Agreement. A snapshot of our achievements during the year is included in the following table while more detail is provided in the Performance Measurement section.



Photo: G. Brinkman

*Retrieval of an experimental towed video camera system being developed by AIMS. The device will be used to survey seabed communities of the Great Barrier Reef and the continental shelf of north-western Australia.*



	2004-05	2003-04
<b>Shift in resources (see p 51)</b>	During the reporting period resources were shifted further enhancing the Institute's contribution to the National Research Priorities. This included: increased effort in water quality research, re-focused effort in the areas of biomedical research and gene expression and re-focussed effort in climate change and impact.	First year of the <i>Research Plan</i> – resources shifted to priority areas (see p 42 of <i>AIMS 2003-2004 Annual Report</i> )
<b>Journal publications (see p 52)</b>	87	73
<b>Citation analysis (see p 53)</b>	Ranked No. 2 Research Institution for coral reef ecology globally. 2 of our staff in top 20 cited authors. AIMS authors on 3 of the 4 most cited papers	Top 1% of specialist organisations making an international impact
<b>Number of postgraduate students (see p 63)</b>	61 (not including AIMS staff)	56 (not AIMS staff or trainees)
<b>Recognition (see p 54)</b>	20 editorial boards	17 editorial boards
<b>Joint ventures and strategic alliances (see p 57-58)</b>	As for 2003-04 plus CoML, RWQPP	AIMS@JCU, ATRE, NOAA, CRC Reef
<b>Collaboration (see p 58)</b>	81% journal publications	77% journal publications
<b>External revenue (see p 60)</b>	\$5.689M	\$5.368M
<b>Adoption (see p 61)</b>	Various examples	Various examples
<b>Contracts successfully completed (see p 63)</b>	37 (107 reports submitted)	24 (>100 reports submitted)
<b>Policy input (see p 63)</b>	11 submissions plus various committees	~7 submissions plus various committees
<b>Adjunct teaching positions (see p 63)</b>	16	11
<b>Patents (see p 68)</b>	No new patents. The Institute manages an Intellectual Property ('IP') portfolio containing 63 patents from 10 families spanning a diverse range of technologies	No new patents. The Institute manages an Intellectual Property ('IP') portfolio containing 63 patents from 10 families spanning a diverse range of technologies.
<b>Commercial disclosures (see p 68)</b>	14	New indicator
<b>Commercial arrangements (see p 68)</b>	53	New indicator
<b>Start-up companies (see p 68)</b>	No new start-ups. AIMS' three spin-off companies continued to operate.	No new start-ups. AIMS' three spin-off companies continued to operate.



## Report from AIMS Chair, Dr Ian Gould

Australia's vast and under-explored marine jurisdiction is more than twice the area of the Australian continent, and a vital part of our national identity. Even the ecological processes of the GBR, perhaps our most studied marine ecosystem, are still relatively poorly understood. Under national and international legislation, including the Australian *Environmental Protection and Biodiversity Conservation Act 1999*, and the *United Nations Convention on the Law of the Sea*, Australia has obligations to protect and preserve the marine environment. Australia's marine resources are already immensely valuable (the sector is worth in excess of \$60 billion to the Australian economy) and the importance of the marine sector is growing. AIMS provides a key component of the scientific expertise that improves knowledge of this large area, and promotes its sustainable use and development.



Photo: J. de Rooy

AIMS is Australia's only research agency solely focused on marine science and is providing leadership in the protection and sustainable use of tropical marine resources globally. Our goal is to provide outstanding science, exceptional value, acclaimed outcomes and a high level of user impact and uptake. The importance of the nation's tropical marine landscape is reflected in key marine industries, such as offshore petroleum and gas, tourism, fisheries and aquaculture. The area is also an area of immense importance from a national security perspective and contains Australia's most charismatic marine habitats and fauna, including the GBR, the Ningaloo Reef system, the oceanic shoals of the Timor Sea, and internationally important populations of whales, sharks, turtles and dugongs. However, we have barely scratched the economic potential of Australia's tropical marine environment; the potential of new industries such as marine biotechnology, aquaculture and tourism is unknown but likely to be significant.

For AIMS, 2004-05 was a busy and productive year dedicated to meeting the targets of the Institute's *Research Plan* for 2003-2006. A wealth of new research was initiated, and continued emphasis was placed on collaboration and partnerships with stakeholders and other researchers in order to deliver research outcomes supporting the sustainable use and protection of Australia's tropical marine resources, in line with political and social aspirations. Amendments to our

Act have increased membership of the Council by one to build upon our formal arrangements with JCU - this member will be nominated by JCU. The Act also updated the title of the head of the organisation to Chief Executive Officer (from Director) reflecting modern usage in today's business community.

## ENSURING QUALITY

During the year, AIMS also noted and supported increased assessment by governments and community of how effectively the resources provided for research are used – are research goals attuned to national needs, are infrastructure and intellectual capacity used effectively, are the commercial benefits of research identified and captured? To answer these questions, AIMS, working with government and other publicly funded research agencies, continued to develop research quality assessment and reporting frameworks in order to ensure research effectiveness, efficiency and quality.

AIMS continues to strive for research quality and, like last year, featured highly in an ISI Essential Science report on science impact. ISI is the leading source of information on scientific publications. This year, ISI analysed impact in the field of coral reef ecology in the past 10 years. The analysis is based on more than 3,400 papers, 5,000 authors, and 1,600 institutions. AIMS ranked second in the list of institutions throughout the world in terms of citations, and two AIMS staff were in the top twenty cited researchers over the past 10 years. AIMS staff were also authors on 2 of the 4 most highly cited papers during this period and 2 of the 3 most cited papers over the last 2.5 years (with 3 in the top twenty). Significantly, JCU was the other major institution, demonstrating that Townsville is a clear research leader in coral reef research.

## EFFECTIVE PARTNERSHIPS

Our joint venture with JCU, known as AIMS@JCU (see Highlight p 7) progressed substantially during the year. This joint venture will further improve Townsville's reputation as an international hub of marine science. Significant milestones achieved this year by the joint venture included the commissioning of the fibre optic cable between the two institutions that greatly improves our ability to share data and engage in computer intensive analysis; the allocation of five post-graduate scholarships; and the appointment of the executive officer and support person. Establishment of the research themes have progressed, with effort focused on aquaculture and coastal processes and marine modelling.

The year also saw excellent progress in developing AIMS' activities in Darwin by way of the joint venture between AIMS and the Australian National University – the Arafura Timor Research Facility (ATRF). The construction of the ATRF laboratory was completed and opened on 30 June 2005 by the Hon. Alexander Downer, Minister for Foreign Affairs and Trade. The ATRF Board finalised the revised Business Plan for the ATRF, which was recently approved by



*The Hon. Alexander Downer, MP, Minister for Foreign Affairs opens the ATRF facility in Darwin on 30th June 2005*

the Department of Education, Science and Training (DEST). The facility has already boosted research capacity in Darwin and enhanced collaboration with CDU. The two organisations joined to bid, successfully, for scientific equipment, including the Australian Research Council (ARC) Stable Isotope Mass Spectrometer and the Northern Territory Government sponsored Gene Sequencing Analyser. Both will be housed in the ATRF.

## GROWING OPPORTUNITIES

Western Australia continues to present significant opportunities for AIMS to build on its research and maximise the impact and uptake of its outputs. Recently, the Premier of WA, Dr Gallop, announced the WA Government will spend \$21 million over 4 years on the Western Australian Marine Science Institution (WAMSI) to develop the State's capacity in innovative marine science. The Institution's proponents were Curtin University, Edith Cowan University, Murdoch University and the University of WA, together with the Department of Fisheries Research Institute, CSIRO, AIMS, the Bureau of Meteorology, and relevant State Government agencies in the fisheries, environment, industry and resources, and heritage portfolios. WAMSI will build on the State's competitive advantages in offshore industries and its pristine marine environment to link Western Australia's internationally recognised research groups in fisheries

## AIMS in the west

For more than a decade AIMS has been researching the tropical waters of northwest Australia. Research in the Ningaloo, Exmouth Gulf and lower North West Shelf ecosystems indicate a highly dynamic region.

To the north, long-term study of the coral ecology and physical oceanography of shallow coral reefs, including Rowley Shoals and Scott Reef, has continued with support from the oil and gas industries. Scott reef lost 80% of its corals during the 1998 bleaching event and was struck another blow six years later when hit by category 5 tropical Cyclone Fay. The reef's isolated location provides an ideal opportunity to observe recovery and to understand how ecosystem response and recovery are influenced by physical oceanographic processes at local and regional scales.

Multidisciplinary studies are piecing together the physical and chemical context of deepwater shoals at the northern edge of AIMS' regional activities. For the first time, active natural gas seeps have been observed in Australian waters, and new areas of deep water coral reefs and new fish species have been observed (see Highlight, p 11).

Further south, the whale shark studies continue to increase our understanding of the activities of these magnificent creatures that visit Ningaloo (see Highlight, p 5). The whale sharks are considered potential indicators of productivity hotspots and will be a focus of research proposed for the Ningaloo Research Program and the new Western Australia Marine Science Institute (WAMSI) (see p 58). The aim is to step up the multi-disciplinary focus on the megafauna, oceanography, productivity and resilience of the Ningaloo Marine Park.



Photo: L. Smith

*Many large boulders and massive coral colonies pushed onto the reef flat by category 5 Cyclone Fay at Scott Reef, northwest Australia.*

science, ocean engineering and ecological research, creating a 'critical mass' in marine research and development. AIMS is a key partner in WAMSI, which will be the platform for additional AIMS' investment in WA.

In April 2005, as part of the Commonwealth Environment Research Facilities programme the Australian Government announced that it had approved funding of \$40 million for a new Marine and Tropical Science Research Facility (MTSRF) which will continue and build upon the work undertaken by the CRCs (Reef and Rainforest). The facility will support research to assist with public policy in managing natural assets in north Queensland, including Torres Strait, the Great Barrier Reef World Heritage Area (GBRWHA) and its catchments, and the Wet Tropics World Heritage Area. The MTSRF will focus on public good research that requires high levels of collaboration and input from several disciplines. It will encourage research in areas of special strength or need, particularly within the national research priority - *An Environmentally Sustainable Australia*. AIMS is represented on the interim MTSRF Board, which will develop the governance arrangements and finalise the 4-year research plan.

## SCIENCE LEADERSHIP

The Institute's historical capability in water quality studies provided strategic leadership in the development of water quality guidelines and the *Reef Water Quality Protection Plan* (RWQPP). The Australian and Queensland governments developed RWQPP in response to scientific advice that the quality of water entering the GBR lagoon is declining and having a deleterious impact on the condition of the GBR ecosystems. The Plan sets out strategies to halt and then reverse the decline in water quality entering the Reef within ten years. Under the Plan, the Great Barrier Reef Marine Park Authority (GBRMPA) is responsible for developing an integrated water quality and ecosystem monitoring programme within the Great Barrier Reef Marine Park (GBRMP) to monitor the effectiveness of the RWQPP.

The *Reef Water Quality Protection Plan* Marine Monitoring Programme was designed and developed by GBRMPA and is coordinated through CRC Reef on behalf of a consortium of research partners. The consortium includes AIMS, CSIRO, Queensland Department of Natural Resources, and Mines, Queensland Department of Primary Industries and Fisheries, Sea Research, and the University of Queensland. AIMS is the major science provider in the programme, which will be a collaborative effort between reef communities, industry, scientists and managers. The initial Programme is for two years but it is expected to mature into a decadal assessment of GBR water quality and catchment management.

## LOOKING AHEAD

The future challenge for AIMS and Australia will be to continue to develop our science capacity to support the development of sustainable industry, especially in regional Australia. The research infrastructure and collaborative networks at AIMS provide a unique capability to capture new opportunities from tropical marine ecosystems. The Institute will continue to focus on enhancing existing partnerships (e.g., AIMS@JCU) and developing new strategic ones that enable AIMS to build on capabilities and to meet the increasing needs of the established and emerging marine industries of tropical Australia. AIMS has successfully applied this approach to deliver greater value to the government's investment in the Institute's research. However, co-invested research does commit the Institute to programmes of research for extended periods and limits our capacity to respond to new, rapidly emerging opportunities created by advances in science and technology globally.

## IN CONCLUSION

It is timely to publicly thank two long-serving Council members whose terms concluded this year. Mr Norbury Rogers had a long and distinguished association with AIMS. He chaired his first council meeting on 7 September 1998, and over his seven years as Chair he provided outstanding guidance and support. Dr Marilyn Sleight was also a long-serving member of Council who concluded her term on the 30th June 2005 after 7 years on the Council. Dr Sleight's understanding of, and connections to, the biotechnology sector greatly aided the setting of strategic directions for AIMS. The efforts of these two Council members over the last seven years, and their contributions to the Institute's strategic oversight are greatly appreciated. Dr Ian Gould became Council Chair from 1 January 2005 and AIMS also welcomed as Council members Ms Elizabeth Montano and Dr John Grace on 16 December 2004 and Professor Peter Høj on 1 January 2005. AIMS performance reflects the fact that its staff are its most valuable asset; they have repeatedly demonstrated their high level expertise and leadership in marine science. Thanks to all AIMS staff, whose skills, commitment and effort enabled AIMS to carry out its work efficiently and effectively for the benefit of Australia.

It is the ongoing task of Council to ensure that this talent and commitment are directed where they will do the most good in meeting national objectives and maintaining the support of our stakeholders. More and more, this will be achieved by working successfully in collaboration with other organisations.

# Report of Operations

- ▶ Report from AIMS CEO, Dr Ian Poiner
- ▶ Introduction
- ▶ Contribution to National Research Priority Goals
- ▶ Examples of NRP Outcomes
- ▶ Performance Measurement (Achievements against Performance Indicators)
- ▶ New Knowledge and Collaborative R & D
- ▶ Role, Legislation and Minister
- ▶ Staffing and Structure
- ▶ Corporate Governance
- ▶ Public Accountability



## 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 and content of the Australian Institute of Marine Science's Report of Operations, in accordance with the Finance Minister's Orders.

Council endorsed the content of the Report of Operations by a resolution at its meeting of 5 September 2005.



Ian Gould  
Chairman  
Australian Institute of Marine Science



Dr. Ian Poiner  
Chief Executive Officer  
Australian Institute of Marine Science

## Report from AIMS CEO, Dr Ian Poiner

2004-05 was my first year at AIMS, and it was a busy one, with ongoing and successful efforts to deliver high quality science outputs, to increase our awareness of the impact and uptake of our science, to improve continuously our corporate and science support systems, and to invest in new skills and infrastructure to maintain AIMS' leadership in marine science.

A major highlight of the year was the successful AIMS-led consortium bid through the CRC Reef to implement the multi-million dollar *Reef Water Quality Protection Plan Marine Monitoring Programme*. As discussed in the Chair's report, AIMS is the key science provider in the programme, which will be a collaborative effort between reef communities, industry, scientists and managers, with each of these groups working together to protect the GBR and its catchment.



Photo: J. de Rooy

### SCIENTIFIC ACHIEVEMENTS

There were many science achievements during the year, but new work by AIMS science teams highlights our expertise and the value of our collaborative networks. AIMS scientist Mark Meekan and his colleagues from the University of Edinburgh, the National Institute of Water and Atmospheric Research (NZ), Curtin University of Technology and the University of Auckland had their paper on the use of sound by larval fish to find coral reefs published in the April 2005 edition of *Science*. The research demonstrated for the first time that reef fish not only locate settlement sites using reef sounds but also discriminate between sounds. This has important implications for the management of reef systems since control of anthropogenic noises (e.g. turbines, ships) or identification of specific reef noises that attract larvae may enable managers to enhance recruitment and re-stocking.

AIMS' scientists collaborated with researchers from the London School of Pharmacy and the University of Aberdeen Chemistry Department. This was the first research team to succeed in transferring the DNA responsible for producing a biologically active compound from a complex organism into an easily cultured bacterium. This breakthrough means that a sustainable supply of target metabolites by microbial fermentation is now possible, and general application

of this technology will enable an economic supply of marine compounds for future clinical investigation and potential global supply. The significance of this breakthrough is enormous as for the first time drug companies will have confidence that they will have access to economic supplies of drug precursors for clinical development.

### SHIFT IN RESOURCES

We continue to align our research with the National Research Priorities and related initiatives and constantly review our capacity to deliver the greatest benefit from the investment in AIMS' research. During the year AIMS reorganised its effort in two areas. Focussing its capabilities in molecular biosciences into a new Team (Biomolecular Resources and Innovation) AIMS has reflected the change in industry priorities from agrichemical biodiscovery focus to a focus on anti-tumour agents and microbes. To meet this shift the capabilities of two teams BioActive Molecule Discovery and BioInnovation Research have been merged.

Increasing links between the Climate Change and Risk and Recovery teams were recognised through their merger into a new team – Environmental Change and Impacts. This will also position the Institute to address emerging opportunities in the Western Australia Marine Science Institute (WAMSI) and the planned Marine and Tropical Science Research Facility (MTSRF).

### NEW PARTNER IN DRUG DISCOVERY AND DEVELOPMENT

During the year, international pharmaceutical company Faustus Forschungs Pharmaceutical Compagnie of Austria/Germany established a collaborative partnership with AIMS based on leads generated from Australian marine biodiversity research under the newly promulgated *Queensland Biodiscovery Act*. Collaborative research is now progressing at AIMS to develop purified compounds of anti-tumour active leads for advance through preclinical trial. The agreement was signed on the day of the empowerment of the first *Australian Biodiscovery Act* in Queensland, which AIMS helped facilitate. The relationship between AIMS and Faustus is unique and heralds a new concept in drug discovery and development. It is based on knowledge, developed at AIMS, of the presence of anti-tumour active compounds in various species of marine organism, and a targeted discovery programme. Faustus have funded AIMS to carry out the collection, screening and chemistry needed to identify novel anti-tumour active leads, adding to Institute and national capacity.

### PERFORMANCE AND PLANNING

Performance measurement is a key element of the Institute's culture and is the basis for our case for support from governments and external stakeholders/clients. As the Australian Government's Research Quality Framework takes shape, AIMS is well placed to demonstrate its performance through ongoing development of performance indicators with Government that have been in place through Triennium Funding Agreements since 1994 (see Performance



Indicators, Appendix 2, p 137). As part of our ongoing focus on performance, we revised the Key Performance Goals and reviewed our milestone-based management system in order to improve our performance assessment and reporting. We also established the AIMS Strategic Science Team, which will be responsible for providing strategic advice for future research needs and opportunities, including the development of the next AIMS *Research Plan*; for advice on the macro resource parameters required to conduct the science proposed in the Plan; and for organising expert reviews of our Research Teams for science quality. Each team will be reviewed at least once per triennium.

Other important performance highlights for the year included a 6% increase in external revenue (to \$5.7 million) and a 13% increase in external recovery (to \$2.4 million). The increase in external revenue represented a slight increase over last year and was largely driven by an increase in funding from collaborative, co-invested research. A significant source of this funding is from Australian government-industry collaborations; in 2004-05 AIMS became a member of the RWQPP research consortium. These increases are not reflected in industry-sourced funds, which now represent 18% of external revenue. AIMS external earnings also reflect its strong international networks, with 27% of earnings sourced from overseas. During the year there was also an 18% increase in the number of peer-reviewed journal publications; this reflects a new policy of publication effort being directed to journal articles in recognition of the fact that such publications maximise the knowledge impact of our science.

### COMMUNITY LINKS

The AIMS Open Day was a resounding success, with overwhelming community interest in AIMS. Over 7,500 people visited on the day – a very good result. The feedback from visitors was extremely positive. This was reinforced by the positive media reports, spontaneous congratulations to the local talk back radio and unsolicited thank-you emails and letters (see Highlight, p 10).

### THE YEAR AHEAD

It is recognised that Australia needs to develop new opportunities for sustainable industry, especially in regional Australia. The research infrastructure and collaborative networks at AIMS provide a capability to capture new opportunities from tropical marine ecosystems. The Institute has a high (approximately 60%) commitment to co-invested research effort. While this adds value to the Government's investment (returning approximately 30% for re-investment in research), it limits AIMS' capacity to shift resources to respond to emerging opportunities created by advances in science and technology (and the needs of the established and emerging marine industries of northern and western Australia). In 2005-06 AIMS will be revising its science plan and associated business development strategy in order to address this constraint.

## AIMS in Northern Australia

The largest scientific research project to take place in Darwin Harbour is being carried out by AIMS in conjunction with Northern Territory government departments. The study, focused on water quality in the harbour ahead of major development, is part of a major injection of research effort by AIMS across northern Australia; associated research focuses on new aquaculture initiatives and the impact of industrial development on rivers and offshore waters of the north.

The harbour project is monitoring, in collaboration with Northern Territory Department of Infrastructure, Planning and Environment (DIPE), water quality in the harbour, expanding previous monitoring to include biological components, and providing this information online (<http://www.aims.gov.au/pages/research/darwin/dhwqmp/dhwq-000.html>). Researchers are also investigating the physical components (flushing dynamics and sedimentation) and biological components (nutrient content, concentration and uptake) of the ecosystem. The use of barramundi to provide an early warning sign of high levels of pollutants in harbour waters is part of the study.

A collaborative study between AIMS and CDU is seeking to extract historical records of water quality from cores taken from corals in the region. These corals will also provide a historical record of the region's climate, adding to data from existing cores at AIMS.

Farther afield, AIMS' researchers, in consultation with local communities, are undertaking research to determine the impacts of water-harvesting and land-clearing associated with the Daly River.

AIMS is also a partner in the new Arafura Timor Research Facility – ATRE, an unincorporated joint venture with the Australian National University (ANU). This provides a local base from which to build research capacity in the north and to collaborate with other leading researchers, such as CDU.



Photo: S. Fitch

*The recently opened Arafura Timor Research Facility adjacent to Charles Darwin University in Darwin.*

Maintaining and enhancing new and existing partnerships will be a focus for the current year. This will enable us to increase our ability to deliver planned outcomes. AIMS@JCU and the ATRF will continue to be priorities as we build on our achievements to date. In addition the enhancement of our research in Western Australia, with the development of the Western Australia Marine Science Institute and the Marine and Tropical Science Research Facility in the north east, will greatly enhance the ability of AIMS research teams to deliver outcomes to Australia.

Providing a clear picture of how we measure the performance of the Institute and providing clarity about performance assessment to our staff will improve our performance. The implementation of our new Key Performance Goals, the new milestone-based reporting system and the rolling expert external review of our Science Teams will lead to continued improvement of the Institute's performance.

### EVENTS SINCE 30 JUNE 2005

- ▶ A major highlight for AIMS came in July when a \$5.5 million Australian Government contribution towards the replacement of the *RV Lady Basten* was announced. In developing the design of the replacement vessel AIMS will be seeking to maintain the cost-effective marine research capability for coastal and middle-water operations (i.e., less than 600 nm offshore) essential to maintaining Australia's sea-going research capability. The replacement vessel will be of multipurpose design, in order to support multidisciplinary marine research in areas ranging from shallow inshore waters to deeper waters off the edge of Australia's continental shelf. Its design will be based on the highly successful *RV Cape Ferguson* and built in Australia. It will be around 30-35 m and equipped to enable continuous sampling, ship-based laboratory analysis, and deployment of a range of state-of-the-art scientific equipment, facilitating the maximum possible collaboration with other agencies, researchers and customers.
- ▶ The successful transfer of sponge aquaculture technology to indigenous communities took a significant step forward when an Indigenous Land Use Agreement was signed between the Manbarra Traditional Owners and the Palm Island Community Development Employment Project (CDEP) at Palm Island on the 26 July (see p 40 for more information).
- ▶ In September 2005, Mr Nicholas Mathiou replaced Dr Merilyn Sleight on the AIMS Council.



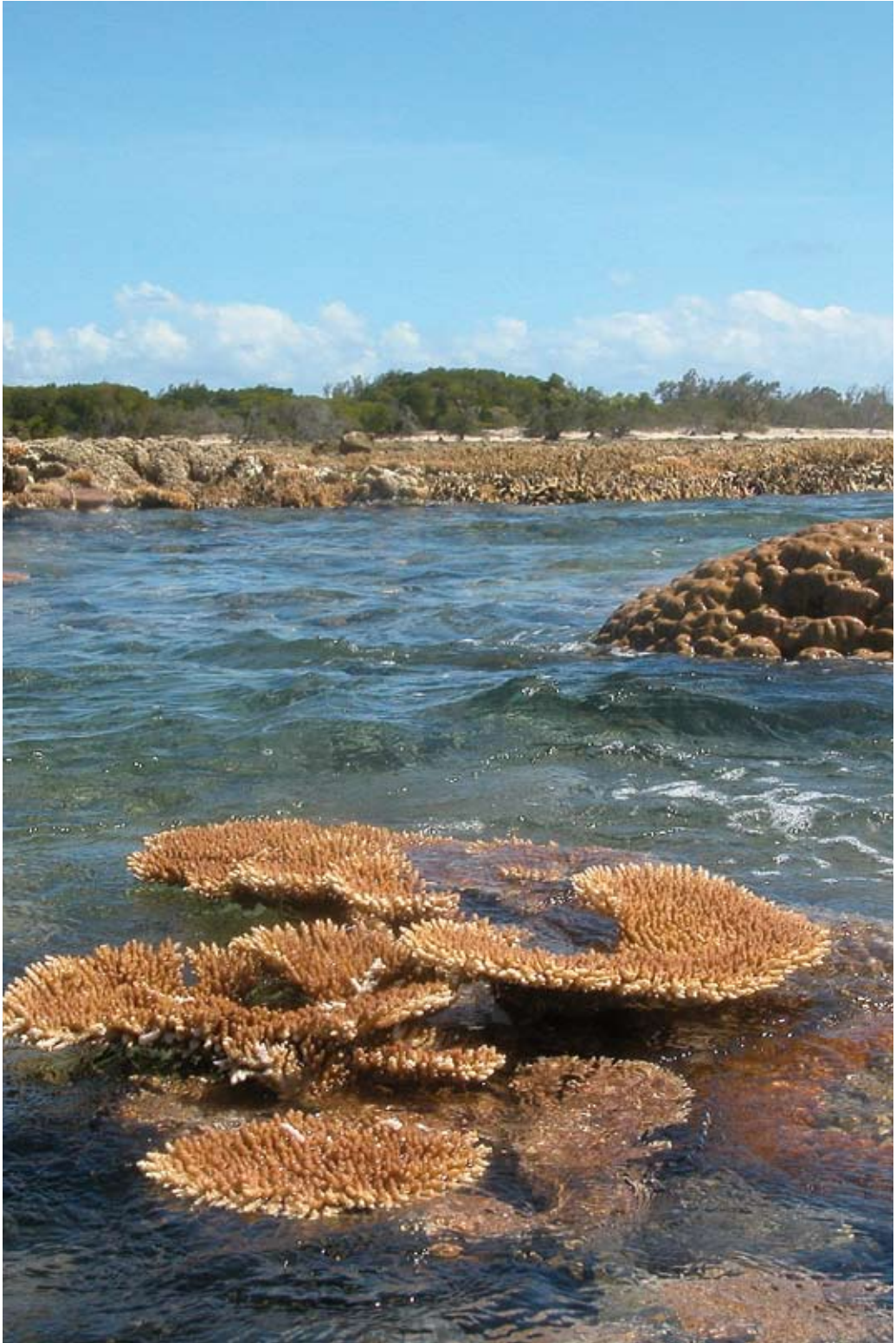


Photo: AIMS

*Spring tides regularly expose living coral colonies.*





## Introduction

AIMS provides a research capability that is directly relevant to the sustainable use and protection of Australia's marine environment, which is two and a half times larger than our land mass. Through investment in the expertise and specialised infrastructure of AIMS, the Australian Government is ensuring the development and application of new knowledge to support sustainable use of the marine environment for future generations; this effort is consistent with the policy *Backing Australia's Ability*. The Institute adds value to this Commonwealth investment by effectively using collaborative national and international networks, strategic alliances and strong links to industry and the community in order to build capacity and achieve critical mass.

The research conducted by AIMS is developed in consultation with the principal users of marine science and technology, and is prioritised within the framework established by our resources and capabilities, user needs, the National Research Priorities and *Australia's Oceans Policy*. This research, the aims of which are described in the *Research Plan*, is delivered through seven multidisciplinary research teams (reduced from nine to improve focus on research priorities, see p 51) working in the areas of:

- ▶ Biodiversity assessment in new areas;
- ▶ Environmental change and impacts;
- ▶ Status and trends;
- ▶ Sustainable coastal development in northern Australia;
- ▶ Water quality in the Great Barrier Reef World Heritage Area;
- ▶ Biomolecular resources and innovation; and,
- ▶ Tropical aquaculture.

This research effort makes a significant contribution to the National Research Priorities, particularly with respect to *An Environmentally Sustainable Australia*, a priority clearly linked to the Institute's mandate. The Institute's research addresses issues of importance at both the national scale (e.g., water quality on the GBR) and global scale (e.g., climate change). In addition, the Institute is able to contribute in identifiable ways to the priority *Frontier Technologies for Building and Transforming Australian Industries*.

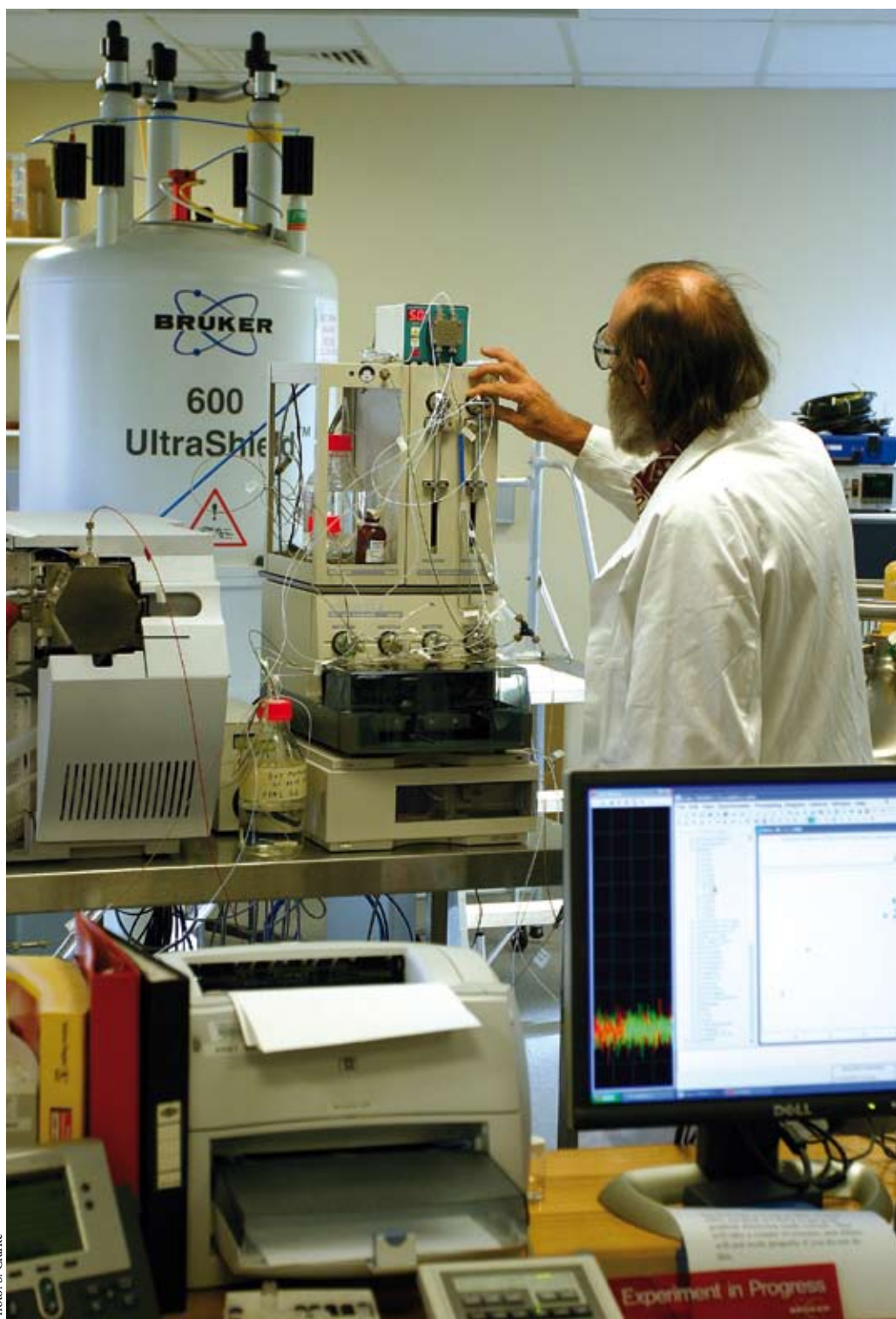


Photo: S. Clarke

*Specialised instrumentation such as the LC-MS-SPE-NMR system provide high resolution, automated data gathering to support the Institute's biodiscovery research.*

# Contribution to National Research Priority Goals

AIMS mission directly aligns with the National Research Priorities and AIMS' entire budget is dedicated to research relevant to the priority areas. Examples of research outcomes against Priority Goals are presented in this section, with a guide to the relevant NRP Priority Goals (listed below) under each example. The relative contribution is categorised as highly relevant (■), very relevant (■) or relevant (■). Research outcomes can contribute to more than one Priority Goal.

## NATIONAL RESEARCH PRIORITY GOALS

### A. AN ENVIRONMENTALLY SUSTAINABLE AUSTRALIA

Transforming the way we utilise our land, water, mineral and energy resources through a better understanding of human and environmental systems and the use of new technologies.

1. Water – a critical resource.  
Sustainable ways of improving water productivity, using less water in agriculture and other industries, providing increased protection of rivers and groundwater and the re-use of urban and industrial waste waters.
2. Transforming existing industries.  
New technologies for resource-based industries to deliver substantial increases in national wealth while minimising environmental impacts on land and sea.
3. Overcoming soil loss, salinity and acidity.  
Identifying causes and solutions to land degradation using a multidisciplinary approach to restore land surfaces.
4. Reducing and capturing emissions in transport and energy generation.  
Alternative transport technologies and clean combustion and efficient new power generation systems and capture and sequestration of carbon dioxide.
5. Sustainable use of Australia's biodiversity.  
Managing and protecting Australia's terrestrial and marine biodiversity both for its own value and to develop long-term use of ecosystem goods and services ranging from fisheries to ecotourism.
6. Developing deep earth resources.  
Smart high-technology exploration methodologies, including imaging and mapping

the deep earth and ocean floors, and novel efficient ways of commodity extraction and processing (examples include minerals, oil and gas) while minimising negative ecological and social impacts.

7. Responding to climate change and variability.

Increasing our understanding of the impact of climate change and variability at the regional level across Australia and addressing the consequences of these factors on the environment and communities.

## **B. PROMOTING AND MAINTAINING GOOD HEALTH**

Promoting good health and well being for all Australians

1. A healthy start to life.

Counteracting the impact of genetic, social and environmental factors which predispose infants and children to ill health and reduce their well being and life potential.

2. Ageing well, ageing productively.

Developing better social, medical and population health strategies to improve the mental and physical capacities of ageing people.

3. Preventive healthcare.

New ethical, evidence-based strategies to promote health and prevent disease through the adoption of healthier lifestyles and diet, and the development of health-promoting products.

4. Strengthening Australia's social and economic fabric.

Understanding and strengthening key elements of Australia's social and economic fabric to help families and individuals live healthy, productive, and fulfilling lives.

## **C. FRONTIER TECHNOLOGIES FOR BUILDING AND TRANSFORMING AUSTRALIAN INDUSTRIES**

Stimulating the growth of world-class Australian industries using innovative technologies developed from cutting-edge research

1. Breakthrough science.

Better understanding of the fundamental processes that will advance knowledge and facilitate the development of technological innovations.

2. Frontier technologies.

Enhanced capacity in frontier technologies to power world-class industries of the future and build on Australia's strengths in research and innovation (examples include nanotechnology, biotechnology, ICT, photonics, genomics/phenomics, and complex systems).

3. Advanced materials.

Advanced materials for applications in construction, communications, transport, agriculture and medicine (examples include ceramics, organics, biomaterials, smart material and fabrics, composites, polymers and light metals).

4. Smart information use.

Improved data management for existing and new business applications and creative applications for digital technologies (examples include e-finance, interactive systems, multi-platform media, creative industries, digital media creative design, content generation and imaging).

5. Promoting an innovation culture and economy.

Maximising Australia's creative and technological capability by understanding the factors conducive to innovation and its acceptance.

#### D. SAFEGUARDING AUSTRALIA

Safeguarding Australia from terrorism, crime, invasive diseases and pests, strengthening our understanding of Australia's place in the region and the world, and securing our infrastructure, particularly with respect to our digital systems.

1. Critical infrastructure.

Protecting Australia's critical infrastructure including our financial, energy, communications, and transport systems.

2. Understanding our region and the world.

Enhancing Australia's capacity to interpret and engage with its regional and global environment through a greater understanding of languages, societies, politics and cultures.

3. Protecting Australia from invasive diseases and pests.

Counteract the impact of invasive species through the application of new technologies and by integrating approaches across agencies and jurisdictions.

4. Protecting Australia from terrorism and crime.

By promoting a healthy and diverse research and development system that anticipates threats and supports core competencies in modern and rapid identification techniques.

5. Transformational defence technologies.

Transform military operations for the defence of Australia by providing superior technologies, better information and improved ways of operation.

A summary of the alignment between the objectives of AIMS' Research Teams and the National Research Priorities.

<i>National Priority</i>	<i>An Environmentally Sustainable Australia</i>						<i>Frontier Technologies for Building and Transforming Australian Industries</i>		
<i>Priority Goal</i>	A1 - Water – a critical resource	A2 - Transforming existing industries	A5 - Sustainable use of Australia's biodiversity	A7 - Responding to climate change and variability	C1 - Breakthrough science	C2 - Frontier technologies	C4 - Smart information use		
<b>Research Teams:</b>									
Biodiversity assessment in new areas									
Environmental change and impacts									
Status and trends									
Sustainable coastal development for Northern Australia									
Water quality in the GBRWHA									
Biomolecular resources and innovation									
Tropical aquaculture									

**Key:** ■ Highly Relevant – intended outcomes and planned activity directly focused on priority goals.

■ Very Relevant – intended outcomes and activity closely related to priority goals, but also focused in related areas.

■ Relevant – intended outcomes and planned activity related and likely to contribute to priority goals.

**Note:** Table includes only NRP Goals relevant to the expertise of, and addressed by, AIMS. A full list of NRP Goals is provided on pages 35-37.



# Examples of NRP Outcomes

## TROPICAL AQUACULTURE

### OUTPUT

Assessment of the reproductive capacity of second generation (G2) prawns demonstrated that efficiency of egg production by female broodstock had improved in comparison with previous trials, indicating that it might be possible to use heritable traits to breed stock with improved reproductive capacity. This is a significant breakthrough in the development of ‘thoroughbred’ domesticated brood stock. Research is continuing to improve the health status of cultured prawns in order to minimise the risk of disease outbreaks and associated production losses. Results have been presented to the Australian Prawn Farmers Association, APFA. AIMS contributes directly to the industry through provision of both scientific findings and domesticated prawn larvae.

### OUTCOME

Prawn farming is the largest established aquaculture sector in tropical Australia. AIMS is working with a consortium of research providers to improve production efficiencies for the primary farmed species – the giant tiger prawn *Penaeus monodon*. Direct industry uptake, and thus immediate benefits in improved farming efficiencies and economics, is ensured through the consortium.

**NRP relevance:**

A2	A5
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## NEW AQUACULTURE OPPORTUNITIES

### OUTPUT

AIMS has developed protocols for environmental manipulation undertaken to induce out-of-season breeding in adult rock lobster *Penaeus ornatus* broodstock, which would enable year-round supply of larvae for research. Technology has been transferred to AIMS’ industrial partner; collaborative work on full domestication is based on ‘demand driven’ production of larvae.

### OUTCOME

The Australian domestication of this species, arguably the most likely and profitable rock lobster aquaculture potential in the world, and the basis for a new industry, can now progress

on the basis of a sustainable supply of larvae. Until this work commenced there were no reliable methods of producing larvae let alone culturing them through their vulnerable early life history stages. This represents a very significant advance in this emergent industry.

***NRP relevance:***

A2	A5
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**SUCCESSFUL TRANSFER OF SPONGE  
AQUACULTURE TO INDIGENOUS COMMUNITIES**

**OUTPUT**

Research into ‘low-technology’ sponge aquaculture, for take-up by remote and indigenous communities, is progressing very well. It is being carried out in close collaboration with the communities in Palm Island (central GBR), Torres Strait and Arnhem Land, and focuses on five species of sponges common to these areas. All five species exhibit different fibre/skeletal qualities and target different sectors of the commercial bath sponge industry. Technology is being transferred to the communities through workshops and traineeships, with reports to indigenous communities and stakeholders, including the Indigenous Land Council, the Australian government Department of Agriculture, Fisheries and Forestry, Coolgare Community Development Employment Programme, Torres Strait CRC and Torres Strait Regional Authority.

**OUTCOME**

Successful techniques of sponge culture developed under this project have been adopted by several indigenous communities that are working to develop sponge farms. These farms provide new economic and educational ventures owned and operated by indigenous communities in remote and regional Australia.

***NRP relevance:***

A2	A5	C2
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**RESEARCH INPUT TO ACCESS AND BENEFIT SHARING POLICY**

**OUTPUT**

A written strategy and continued submissions and presentations to national and international agencies have promoted development of policy on access and benefit sharing and led to benefit sharing agreements in all Commonwealth, State and Territory marine areas. These agreements are based on the successful AIMS biodiscovery agreement in Queensland.

## OUTCOME

Work in this area has led to the development of procedures for others to follow when engaging in biodiscovery research, and thereby increased the attractiveness of investing in Australian marine biotechnology and created opportunities for commercialisation of new marine resources.

### *NRP relevance:*

A2	A5	C1	C4
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## MICROBIAL INDICATORS OF POLLUTION

### OUTPUT

World-first publications on the sensitivity and use of microbial indicators of pollution from both tropical and polar experimental studies and a DNA micro-array gene expression technology that enables detection of pollution stress at chronic levels before more obvious impacts become apparent.

## OUTCOME

Use of micro-organisms to identify pollution levels and impacts provides early warning indicators for inclusion in management strategies. For example, identification of the uptake of metals and effects of pollution in Antarctica has been important in changes to policy of the US and NZ Antarctic agencies, which now treat sewage discharges into McMurdo Sound. Evidence of sensitivity to pollution in micro-organisms as a precursor to detecting larger environmental effects has promoted shifts in management practices in pristine World Heritage areas, leading to, for example, a review of shipping trajectories through the Great Barrier Reef.

### *NRP relevance:*

A5	A7	C1
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## NEW TECHNOLOGY TO CULTURE

## MARINE COMPOUNDS FOR DEVELOPMENT OF NEW DRUGS

### OUTPUT

Collaborative research at AIMS has successfully overcome the difficulty of producing economic supplies of marine compounds for clinical investigation. In recently completed experiments, researchers transferred the DNA responsible for producing a biologically active compound from a complex organism into an easily cultured bacterium, thus enabling the culture of a sustainable supply of target metabolites by way of microbial fermentation.

## OUTCOME

This new knowledge will eliminate one of the major hurdles inhibiting big pharmaceutical investment in natural marine products for the purposes of developing new drugs. It suggests that there is a reliable, sustainable and economic means to produce the marine resources for clinical

trials. Immediate evidence of the value of this research is the increase in applications to access the AIMS sample library and chemistry expertise.

**NRP relevance:**

A2	A5	C1	C2
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Photo: I. Zagorskis

*Deployment of sediment traps from the back deck of RV Southern Surveyor during a Timor Sea research cruise (see Highlight p 11).*

## IMPACT OF LAND-DERIVED SEDIMENTS AND NUTRIENTS TO THE GBRWHA

### OUTPUT

Models developed by researchers at AIMS have indicated that both pelagic and benthic microbial communities, in concert with larger food chains, are extremely efficient at cycling sediments and nutrients in the inshore water column and benthos of the GBR. These communities are capable of processing all of the unstable nitrogen emanating from land. Researchers have also found that regional variations in water quality throughout the GBR are related to levels of runoff from adjacent catchments.

### OUTCOME

The impact of land-derived nutrients and sediments to the inshore GBRWHA is one of the central environmental issues in Australia, as great concern has been expressed about whether or not the Great Barrier Reef coastal zone, including reefs, are being affected by human land-based activities. The highly efficient cycling of terrestrially derived nutrients by microbes in the coastal zone helps to explain why coral reefs on the middle and outer shelves have been relatively unscathed, and are likely to remain so, despite a significant increase in sediment delivery since European settlement. GBRMPA is using this data as part of its risk assessment process for developing policy regarding the effects of land runoff to the GBR.

#### ***NRP relevance:***

A5

## LARGE SCALE CHLOROPHYLL CONCENTRATIONS

### OUTPUT

Analysis of extensive data on surface chlorophyll concentrations in the GBRWHA has provided researchers and managers with improved information on regional and temporal patterns of nutrient availability; chlorophyll concentrations are used as a proxy measure for this availability. Further work to validate satellite-based ocean colour imaging as a measure of chlorophyll is being undertaken as part of the RWQPP. Updated results from field sampling are available on the web at <http://adc.aims.gov.au:9555/chloro/do/gotoStart.do>.

### OUTCOME

Chlorophyll data is part of a long-term and regularly updated dataset that is used by managers and researchers. For example, regional and temporal data were used by researchers and GBRMPA to design the marine monitoring programme that supports the *Reef Water Quality*



*Protection Plan.* The programme enabled the programme researchers to detect subtle long-term changes in chlorophyll levels, and thus nutrient availability and water quality.

**NRP relevance:**

A2	A5
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Photo: N. Moser

*Student researchers assisting AIMS scientist Dr Ray Berkelmans with an investigation into coral growth rates in the Keppel Islands, Queensland. Coral growth is critically linked to sea temperature.*



## VALUE-ADDING FROM SEA SURFACE TEMPERATURE DATA

### OUTPUT

Sea surface temperature (SST) data was acquired and processed into SST products. These data and products are accessible via the worldwide web (<http://138.7.120.8:9555/sstatlas/do/findQuicklook.do?latest=y>), and are provided to CSIRO Marine and Atmospheric Research and to the National Oceanic and Atmospheric Administration, USA.

### OUTCOME

The SST products developed by AIMS' researchers are used to support the national ocean modelling work of CSIRO, the Bureau of Meteorology and the Australian Navy. GBRMPA have used a composite product based on a large amount of AIMS data to develop a prototype application to monitor temperatures associated with coral bleaching on the Great Barrier Reef.

#### ***NRP relevance:***

A5	A7
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## TEMPERATURE LOGGERS

### OUTPUT

All AIMS temperature logger data, representing more than 10 million records, are now available on the web. Approximately 130 loggers are spread across 65 sites, from PNG to Bundaberg, and are changed once a year by a network of volunteers and collaborators. Additional data from the Solitary Islands Marine Park are included on behalf of the NSW Marine Park Authority. These data have been synthesised and made available to fellow researchers, and to the general public with the support of CRC Reef ([www.reeffutures.org/topics/bleach/loggers.cfm](http://www.reeffutures.org/topics/bleach/loggers.cfm)).

### OUTCOME

Data from the logger programme continue to be used in a wide range of research areas, including climate change, the effects of line fishing, benthic monitoring, introduced species, sea bird nesting research projects conducted by JCU, CQU, UQ, QDPI&F, CSIRO and other research organisations. Location-specific temperature thresholds have been developed for coral reefs using these data. On behalf of GBRMPA, these thresholds are used each summer in conjunction with automatic weather stations and satellite products to monitor the risk of coral bleaching on the GBR.

#### ***NRP relevance:***

A5	C4
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## MONITORING AND DETECTING TRENDS IN THE PHYSICAL ENVIRONMENT

### OUTPUT

Daily sea surface temperatures from satellites were monitored over the 2004-2005 summer and weekly updates were provided to GBRMPA. Bleaching thresholds were not exceeded at any of the monitoring stations during the summer.

### OUTCOME

Daily satellite SST maps were an integral part of the GBR bleaching-monitoring products delivered to GBRMPA during the 2004-05 summer that allowed it to monitor the health of the reef (e.g., BleachWatch).

#### **NRP relevance:**

A7

## 'REPRESENTATIVE AREAS PROGRAMME' MONITORING

### OUTPUT

Statistical methods and software that can be used to design systems of protected areas subject to biophysical characteristics of habitats – e.g. their size, location, shape and how many there are of each – were developed and applied. These numerous and complex constraints were programmed into interactive software that can visualize and manipulate protected area systems.

### OUTCOME

These methods and software contributed to the design of the Great Barrier Reef Marine Park Authority's Representative Areas Programme (RAP) that was the basis of rezoning the park. RAP was legislated on 1 July 2004.

#### **NRP relevance:**

A5

## ASSESSMENT OF THE STATUS OF CORAL REEFS

### OUTPUT

For decades, AIMS has been active in assessing the status of both domestic and international coral reefs. In 2004-05, these activities culminated in two major outputs, the *Status of Coral Reefs of the World: 2004* report and *Methods for Ecological Monitoring of Coral Reefs: A Resource for Managers*.

## OUTCOME

These volumes and their predecessors continue to be used as benchmark references for researchers and managers worldwide. In recognition of AIMS reputation in this area, AIMS staff had a large involvement in assessing the damage to and options for rehabilitation of reefs following the Asian tsunami.

### **NRP relevance:**

A5

## SEABED BIODIVERSITY OF THE GREAT BARRIER REEF

### OUTPUT

The Great Barrier Reef Seabed Biodiversity Project is a large multi-agency collaboration that is mapping inter-reefal habitats and their associated biodiversity throughout the GBRWHA. The Project has now sampled in excess of 1,000 sites and, with half the sorting completed, has identified more than 7,000 species, including new records for Australia and undescribed (new) species. Researchers from AIMS, CRC Reef, CSIRO, Queensland Department of Primary Industry and Fisheries, and the Queensland Museum are developing data products, including habitat maps, image libraries and taxonomic inventories. Preliminary results are being posted to a public website <http://www.reef.crc.org.au/resprogram/programC/seabed/index.htm>

## OUTCOME

Preliminary data from the Great Barrier Reef Seabed Biodiversity Project were used during a Queensland Fisheries Service workshop (Ecological Risk Indicators for the Trawl Fishery) to develop a set of indicators for use in fisheries risk assessments required under the *Environmental Protection and Biodiversity Conservation (EPBC) Act, 1999* in order to demonstrate sustainability. Information on catches of syngnathids (pipefishes) contributed to an annual report from the Queensland Government to the Australian Government Department of Environment and Heritage (DEH) because these species are listed under Part 13A of the Act, which controls international trade in wildlife sourced from State and Commonwealth waters.

### **NRP relevance:**

A5

## MONITORING THE STATUS OF THE GREAT BARRIER REEF

### OUTPUT

Long-term quantitative data on corals, algae, reef fishes and crown-of-thorns starfish (COTS) from annual surveys spanning more than a decade have been collated from reefs covering nearly the entire GBRWHA. These data are summarised and made available to GBRMPA and

to the general public via the Internet. In December 2004, the programme released *Long-term Monitoring of the Great Barrier Reef Status Report No. 6* in CD format, which allowed the inclusion of video material and photos as well as access to more interactive data summaries. These data have also been the basis of a large number of management reports and peer-reviewed scientific papers.

### OUTCOME

Coral cover on core survey reefs, as estimated from video records, provides the basis for Key Performance Goal 1 of the GBRMPA – *The relative numbers of reefs that are 'healthy' compared to 'not healthy' as assessed by the AIMS Great Barrier Reef Long-term Monitoring Programme*. This is one of seven measures for assessing the success of the GBRMPA in achieving its intended goals and outcomes for GBR management. These reef fish and benthos surveys have also been used in the design of an effective monitoring programme for the new system of Representative Areas on the Great Barrier Reef.

#### **NRP relevance:**

A5

C4

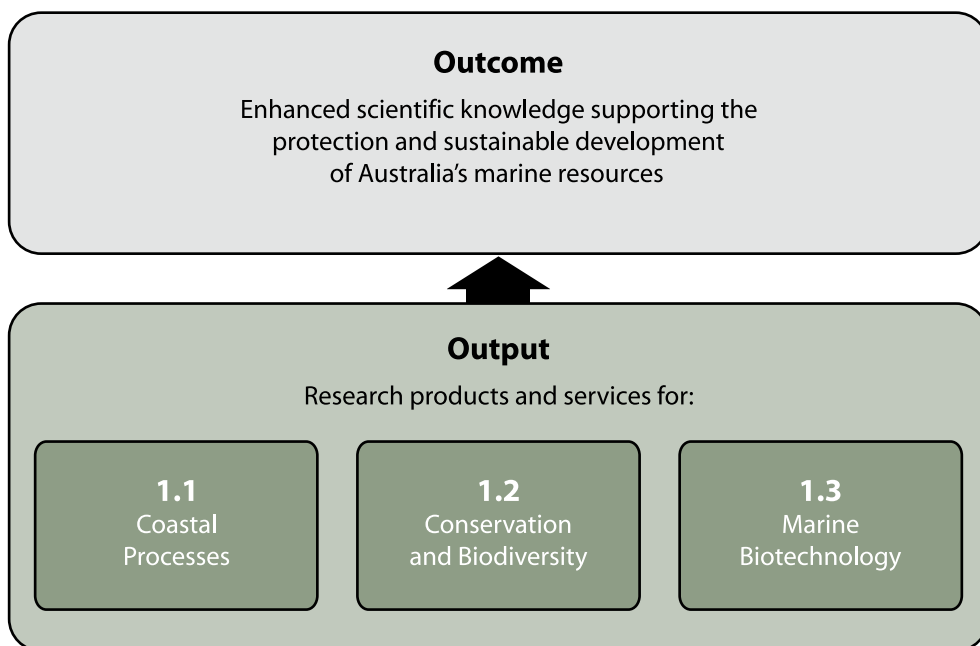


Photo: E. Matson

*AIMS scientist Dr Ray Berkelmans conducting a coral coring experiment at Myrmidon Reef. Data gathered provide records of past climatic conditions and background information for current studies on environmental change (see Highlight p 12).*

## Performance measurement (achievements against performance indicators)

The efficiency and effectiveness of AIMS' research products and services under the outcome-output framework is assessed against performance indicators that have been designed to ensure the achievement of goals, and been agreed between the government and the Institute as part of the 2004-07 Triennium Funding Agreement (see Appendix 2, p 137). Research outcomes against the *National Research Priority Goals* provide further evidence of the effectiveness of AIMS' contribution to the outcome-output framework.



## Water quality research for a healthy reef

Landmark research spanning almost 20 years has triggered a major new strategy to improve the quality of water running into the Great Barrier Reef (GBR) - the world's largest Marine Protected Area. In 1986 researchers at AIMS started an extensive nutrient and sediment sampling program in north Queensland rivers and catchments adjacent to the GBR in a bid to assess natural and human induced nutrient inputs.

Results of research and monitoring activities show the increasing magnitude of runoff to the GBR over the last century, and that associated deterioration in coastal water quality poses a significant threat to coastal coral reef ecosystems. The work is described in *Catchments and Corals: Terrestrial Runoff to the Great Barrier Reef* by Dr Miles Furnas, co-published with CRC Reef in 2003. Parallel research activities on nearshore coral reefs have greatly increased our understanding of the ecology of this variable, and often disruptive environment. This comprehensive body of river runoff research stimulated the development of the joint Australian Government - Queensland Government *Reef Water Quality Protection Plan*.

This wealth of experience and expertise in water quality and coastal reef research has contributed greatly to the development of water quality standards for coral reef ecosystems and continues to be a major focus in GBR reef conservation. With the monitoring programme expanding to cover coastal reefs, water quality continues to be a major focus of reef conservation. In parallel with reef health and water quality monitoring, predictive models are being developed to examine the potential impact of other threats such as crown-of-thorns starfish and agricultural pesticides. The results from monitoring and modeling efforts will be used by reef managers to track the status of coastal reefs and waters, and the State Government, community organisations and land managers to assess measures used to reduce sediment and nutrient loss from the land.

The programme being implemented as part of GBRMPA's RWQPP monitoring, measures fine sediment and nutrient loads carried by 10 priority rivers along the GBR coast, and tracks the status of coastal reefs and coastal water quality in the GBR lagoon. This program makes extensive use of instrumentation developed and constructed at AIMS to record levels of turbidity (fine sediment) in rivers during wet season floods. These monitoring programs involve collaborations with a number of universities, government agencies, and community organisations that sample local waters at regular intervals and during flood events. In another programme, local fishers help to monitor pesticide levels in mud crabs (*Scylla serratus*), an estuarine species important to commercial and recreational fishers.



## New knowledge and collaborative R&D

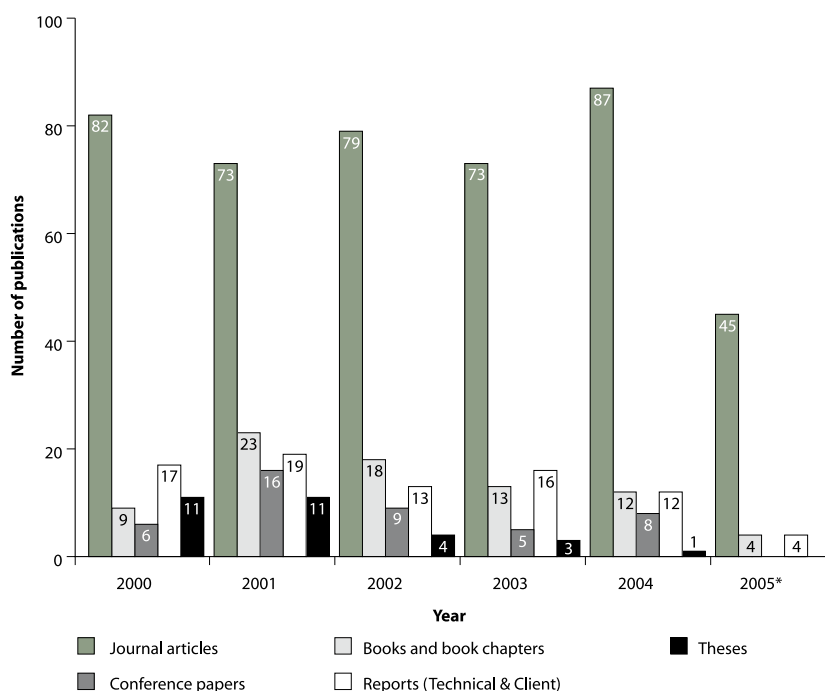
### SHIFT OF RESOURCES TO PRIORITY AREAS

During the year, as part of the Institute's ongoing programme of evaluation and review of emerging needs/opportunities, AIMS shifted its resources to enhance outcomes in water quality, biotechnology and climate change. This further enhances the Institute's contribution to the National Research Priorities and is reflected in the table on page 38.

- ▶ AIMS further strengthened its investment in reef water quality research through its participation in the Reef Water Quality Protection Plan Monitoring Programme (see Joint Ventures, p 57-58). The shift ensures timely delivery of high quality research and monitoring that will be used by reef management agencies (e.g. GBRMPA) to follow the status of coastal reefs and waters, and by State Government agencies, community-based organisations and land managers to assess efforts to reduce sediment and nutrient loss from adjacent catchments. The consortium of research providers is coordinated by CRC Reef. This programme strongly supports the National Research Priority Goals A5 and C2.
- ▶ Following the successful spin-off of biosensor research (Cleveland Biosensors Pty Ltd), AIMS reviewed its investment and capacity in the areas of biomedical research and gene expression. In September 2004, in order to permit renewed focus on these emerging areas, two teams (the Bio-Active Molecule Discovery team and the Bio-Innovation team) were merged. This also permitted focus on environmental biotechnology sectors that had been identified as a growing market sector in Australia. This research strongly supports the National Research Priority Goals A2, A5 and C1.
- ▶ During the year, as part of extensive consultation with other research agencies, AIMS reviewed its climate research capabilities. To enhance AIMS existing capacity to address emerging needs, the effort of two teams (Climate Change and Impacts, and Risk and Recovery) were combined into a team focused on Environmental Change and Impacts. This research strongly supports the National Research Priority Goal A7.

## SCIENTIFIC PUBLICATIONS

AIMS continued to focus significant resources on reporting research results to its scientific peers, clients, stakeholders and end-users. Its success in doing so was reflected in an ISI Essential Science analysis of the contribution of AIMS and AIMS staff in the field of coral reef ecology over the past ten years (see Citation analysis, p 53). Publication data over the last five years are shown in the following graph as at 30 June 2005.



\* number as at 30 June 2005

Output has been very stable over this period, particularly with respect to journal articles. The large number of journal articles published during 2004 reflects the advanced stage of the current research plan. Indications from the first six months of 2005 suggest that this upward trend is continuing. The increase in publications in peer-reviewed journals has decreased the resources available for preparation of books, book chapters and conference papers, but is in line with the fact that journal articles tend to have greater impact and uptake.

Increasingly, AIMS is using electronic media, such as CD-ROM, to provide users with interactive reports (e.g., the *LTMP Status Report, Status of Coral Reefs of the World: 2004*). The Institute augments its printed research output by providing a substantial amount of information on its

websites ([www.aims.gov.au](http://www.aims.gov.au) and [www.reeffutures.org](http://www.reeffutures.org)). The Institute's main external website was extensively revised during the year. The site now holds over 11,000 individual pages and provides more than 8,800 external links and 110,000 internal links. During the reporting period, there were in excess of 130,000 visits to the site via the main point of entry. While this number represents a drop from the result reported in 2003-04, visitation statistics suggest that many users prefer to 'deep link' to the site, in order to quickly access relevant information, rather than linking to the main entry point. The ProjectNet, Long-term Monitoring and Media pages were the most frequently visited second-level pages on the site. The addition of services, such as on-line access to AIMS' sea surface temperature archive (including the latest SST images) and streamlining of the flow of the Institute's weather station data, significantly improved the Institute's data delivery mechanisms during the year. A secure site providing access to the Institute's water quality data was also developed (see WQ outcome, p 43).

Public tours continue to provide an effective means of informing the community about the activities of the Institute. A dedicated group of volunteers makes these tours possible. During the year, again demonstrating AIMS' ongoing efforts to link to the community, 58 public tours were conducted. AIMS Open Day 2005, which attracted 7,500 visitors (see Highlight, p 10), was another significant example of the Institute's commitment to public outreach.

### CITATION ANALYSIS

AIMS and its researchers featured highly in an ISI Essential Science report that analyzed contribution to the field of coral reef ecology over the past 10 years. The analysis was based on more than 3,400 papers, more than 5,000 authors, and more than 1,600 institutions. AIMS was the second ranked institution in terms of citations, and two AIMS staff were in the top twenty cited researchers. AIMS staff were also authors on three of the four most highly cited papers during this period. Coral reef ecosystem science is only one area of research strength at AIMS. For more information go to <http://www.esi-topics.com/coralreef/inst/c1a.html> and <http://www.esi-topics.com/coralreef/papers/a1.html>

## RECOGNITION BY PEERS (PRIZES, AWARDS & ASSOCIATIONS)

During the reporting period, outstanding contributions of several individual staff members were recognized by a number of national and international professional bodies.

### PRIZES

- ▶ Madeleine Van Oppen received the 2005 Dorothy Hill award from the Australian Academy of Science. The award is given to a young female researcher working in the earth sciences, including reef science, ocean drilling, marine science and taxonomy in marine systems.
- ▶ Eric Wolanski was awarded an Erasmus Mundus scholarship to visit the universities of Bergen, Plymouth, Cadiz and Algarve, one out of five EU scholarships in estuarine and coastal science.
- ▶ Fulbright scholarship student James Bird received the Peter Holloway Award for best student oral presentation at the 2004 AMSA Conference.
- ▶ Enrique de la Vega was recognized for presenting the best student abstract for the Asia Pacific Aquaculture Conference.

The leading expertise of AIMS' researchers was again recognised through invitations to staff to give presentations in a number of specialized areas relating to tropical marine science. Throughout the reporting period 14 presentations were made as invited speakers, 4 of these were plenary or keynote addresses. The most significant examples include:

- ▶ Clive Wilkinson gave the plenary talk to Working Group II on *Biodiversity and Reefs* at the Convention on Biodiversity meeting in Bangkok, February 2005.
- ▶ Terry Done was the invited plenary speaker at the United States National Oceanic and Atmospheric Administration's (NOAA) public meeting *Connectivity: Science, People and Policy* in the Florida Keys National Marine Sanctuary, August 2004. His talk was entitled 'Lessons from the Great Barrier Reef: Sister system of the Florida Keys'.
- ▶ Eric Wolanski was an invited keynote speaker on estuarine and coastal ecohydrology at Land-Ocean Interactions in the Coastal Zone (LOICZ) Open Science Conference, June 2005.
- ▶ Eric Wolanski was invited to provide a keynote lecture at the International Conference on Deltas, Ho Chi Minh City, Vietnam, January 2006.
- ▶ Janice Lough was an invited participant at the Workshop on the Impacts of Increasing Atmospheric CO<sub>2</sub> on Coral Reefs and other Marine Calcifiers, St Petersburg, Florida (sponsored by NSF, NOAA, USGS), April 2005.
- ▶ Madeleine van Oppen was an invited speaker and Janice Lough chaired a session at the Australian Academy of Science symposium 'Frontiers of Science 2005', April 2005. Madeleine also organised a mini-symposium called "Can coral reefs survive climate change?" at the symposium.

- ▶ Janice Lough was an invited speaker at the Intergovernmental Panel on Climate Change (IPCC), Working Group II, Lead Authors meeting, Cairns, March 2005.
- ▶ Eric Wolanski was an invited speaker on estuarine ecohydrology at the UNESCO-IHP workshop on ecohydrology of estuaries and coastal seas, University of Algarve, Faro, Portugal, September 2004.
- ▶ Libby Evans-Illidge was an invited participant at the Convention on Biological Diversity's Panel of Experts on Access and Benefit Sharing (Australian representative) Montreal, and to the Stratos/IISD/Swiss Government's Access and Benefit Sharing Tool Project Advisory Committee. She is also an invitee on the Australian Government Interdepartmental Committee on Access and Benefit Sharing Policy.

## EXPERT COMMITTEES

- ▶ Eric Wolanski was appointed chairman of the UNESCO estuarine ecohydrology project and, in September 2004, led a group of 30 oceanographers working on an ecohydrology study of the Guadiana Estuary in Portugal and Spain.
- ▶ Eric Wolanski was appointed a member of the Scientific and Policy Committee of the Japan-based International Center for Environmental Management of Enclosed Coastal Seas.
- ▶ Lyndon Llewellyn was appointed to the Association of Analytical Communities (AOAC) Presidential Task Force on Marine and Freshwater Toxins and the International Atomic Energy Agency (Expert Consultant to United Nations Development Project 'Transfer of Receptor Binding Assay for Harmful Algal Toxins').
- ▶ Janice Lough was an invited participant at the UN-Sigma Xi Science Expert Group, 2nd Meeting, Trieste, Italy, March 2005.
- ▶ Julian Caley was invited on to the 'Resilience Steering Group', which is being supported by IUCN in collaboration with the IUCN Climate and Adaptation Group.
- ▶ Dan Alongi was asked to serve on the mangrove rehabilitation committee on behalf of CARE International for tsunami relief in Banda Aceh, Indonesia.
- ▶ A number of AIMS staff are members of RWQPP Expert Groups – specifically, the RWQPP Biomarker Expert Group and the RWQPP Marine Monitoring Programme Expert Advisory Panel.
- ▶ Dr Ian Poiner accepted a new appointment to International Marine Biotechnology Conference Board.

## OTHER

- ▶ AIMS staff were part of the Australian response to the Asian tsunami disaster. This included a personal request to Dr Clive Wilkinson from the Prime Minister of Thailand. Dr Wilkinson was appointed as a consultant by UNDP to advise the Government of Thailand on tsunami rehabilitation (see Highlight, p 8).

- ▶ Dr Paul Long came to AIMS on sabbatical leave from the London School of Pharmacy to undertake research with AIMS' scientists on gene expression and to produce unsynthesisable anti-tumour active marine natural products. This has now developed into a full collaboration.
- ▶ Three senior science staff acted as OZReaders in evaluating research funding applications to the Australian Research Council. OZReader is the highest level of external review used by the ARC and their appointment reflects the professional standing of OZReaders and track record with the ARC of providing reliable, quality, and critical reviews.

### EXTERNAL ASSESSMENT AND REVIEW

During the 2004-05 year there were no formal external assessments of AIMS research commissioned by AIMS. However, the review of research impact in the field of coral reef ecology (see Citation analysis, p 53) demonstrated the Institute's international standing and research quality.

Independent external assessment of AIMS research at the research team level will begin in 2005. This will augment internal review and substantial stakeholder and client consultation, which is an on-going process designed to assess the relevance and performance of research.



Photo: S. Clarke

*Researchers Kim Clerke and Grant Milton inspect tropical lobster broodstock in the Institute's maturation unit.*



## CO-INVESTMENT IN RESEARCH

### JOINT VENTURES AND STRATEGIC ALLIANCES

AIMS continued to invest heavily in strategic joint ventures and strategic alliances during 2004-05. The collaborative nature of these co-investments continues to pay dividends in terms of adding value to AIMS' total investment in science and of the returns realized. The most significant collaborative ventures and alliances during the reporting period are summarised below.

**AIMS@JCU.** This year, great progress was made in development of this unincorporated venture with James Cook University. Efforts are currently focused on two research themes: Tropical Aquaculture, specifically factors affecting successful breeding of aquaculture species; and Coastal Processes and Marine Modelling, which concentrates on understanding coastal and marine environments and the impact on them of human activities. Significant milestones have been achieved, including the commissioning of a fibre-optic cable between the two institutions that greatly enhances their ability to share data and engage in computer-intensive analysis, the awarding of five postgraduate scholarships to AIMS@JCU students, and the appointment of an executive officer and support person (see Highlight, p 7).

**ATRF.** The construction of the Arafura Timor Research Facility (ATRF), an unincorporated joint venture between AIMS and The Australian National University, was completed during the year. This facility, which was officially opened on the 30 June 2005 by the Minister for Foreign Affairs, The Hon. Alexander Downer MP, will support scientific and regional social science research.

The facility provides new infrastructure and services to boost research capacity in the north, and is being further enhanced through joint funding submissions led by CDU. These submissions were successful in securing funds for a Stable Isotope Mass Spectrometer Facility and a Gene Sequencing Analyser. This scientific instrumentation will be commissioned at the ATRF in 2005-06 (see boxed text, p 30).

**CRC Reef.** This Cooperative Research Centre is a collaborative venture involving AIMS, GBRMPA, CSIRO, JCU, QDPI&F, AFMA, AMPTO, QSIA, TSRA, the GBR Research Foundation and SUNFISH Corp. Queensland University is an associate member. The CRC is administered by a Board with an independent Chair. The venture has enhanced links with users of research, and has provided essential funding to improve understanding of the GBRWHA. Financial year 2005-06 is the last year of this venture.

**NOAA.** AIMS strategic alliance with NOAA advanced considerably this year. Joint research on hydrodynamic modelling of the physical controls of coral bleaching continued. The research capability grew with the addition of a PhD student funded through AIMS@JCU, finance was

received by JCU for an HF Radar facility, and an ARC Linkage Grant with the University of Queensland. NOAA is the linkage partner on this grant. NOAA also hosts the other node of the Census of Marine Life Project described below.

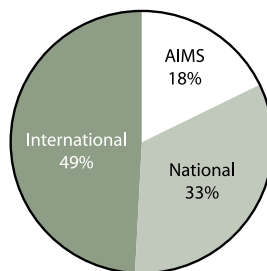
**Census of Marine Life.** A new coral reef field project under the international Census of Marine Life (CoML) received funding from the Alfred P. Sloan Foundation. AIMS will host one of two nodes of this project and one staff member is a co-Principal Investigator on the programme. This project will seek to expand tropical taxonomic knowledge, with a strong focus on understudied species, increase the exchange of coral reef ecosystem data globally, develop new and innovative technology and sampling strategies, and contribute to the CoML barcode initiative.

**RWQPP.** AIMS has taken a leading role with other research providers (CSIRO, QDPI&F, QEPA, QDNRM, Queensland Health Scientific Services (QHSS) and Sea Research) in formulating a consortium to deliver a marine monitoring programme for the Great Barrier Reef Marine Park Authority (GBRMPA) under the *Reef Water Quality Protection Plan*. The consortium, coordinated by the CRC Reef, is undertaking collaborative research and monitoring to: track changes in the status of river waters flowing into the GBR; the water quality status of GBR lagoon waters; the health of coastal coral reefs; and the levels of agricultural pesticides in estuarine animals. During 2004-05, AIMS and its collaborating partners delivered three significant milestone reports.

**WAMSI.** AIMS is a member of the recently announced Western Australian Marine Science Institution (WAMSI) that will develop the State's capacity in innovative marine science. WAMSI proponents consisted of all WA Universities, relevant State Government agencies, CSIRO, AIMS, and the Bureau of Meteorology. The Western Australian Premier, Dr Gallop, recently announced that the WA Government will invest \$21 million in WAMSI over 4 years.

### NUMBER OF COLLABORATIONS

AIMS collaborative networks with national and overseas partners add significant value to AIMS research outputs and outcomes. This is reflected in AIMS journal publications: 81% (an increase of 4% from 2003-04) were co-authored with researchers from other institutions. AIMS international linkages continue to play a critical role in the delivery of research outputs: 49% (an increase of 16% from 2003-04) of AIMS publications were co-authored with researchers from overseas institutions (see pie chart). These mutually beneficial alliances fill gaps in institutional and national capacity to maintain the highest quality science outputs. In total, AIMS has collaborative networks with 91 organisations, covering all states and territories of Australia and 21 overseas countries.





Examples of significant collaborative research during the reporting period are:

- ▶ The Seabed Biodiversity Project, a collaborative project involving AIMS, CSIRO, the Queensland Museum, and QDPI&F, with funding from CRC Reef (see Contribution to National Research Priority Goals, p 35).
- ▶ A joint project between AIMS, CDU and Griffith University is delivering collaborative research to provide improved understanding of water column processes in Darwin Harbour. This information will be incorporated into an ecohydrology model of Darwin Harbour being developed by AIMS and Northern Territory DIPE.
- ▶ AIMS and the Northern Territory DIPE have carried out collaborative research to improve prediction of the impact on the Daly River coastal ecosystem of planned changes in land use practices, including changes to freshwater usage associated with the conversion of pastoral leases to intensive agriculture.
- ▶ AIMS, NOAA, JCU and UQ are continuing a long-term collaboration on the hydrodynamic modelling of bleaching risk. With support from The Nature Conservancy, initial work in 2003 was focused on Palau; it is now continuing at Heron Island in the southern GBR. Modelling in Palau was successful and is providing useful information to managers. Two long-term moorings were deployed off Heron Island in August 2004 to monitor the impact of the East Australian Current and of upwelling on the shelf edge of the Capricornia Group of reefs. The work is targeted toward ensuring the techniques are widely applicable over different coral reef systems in Australia and around the world.
- ▶ In collaboration with QEPa and ACTFR, AIMS presented a framework for deriving realistic water quality standards for GBR waters that take account of natural nutrient, sediment and chlorophyll concentrations found in the GBR.

- ▶ Opportunities for the development of regional industries, especially in indigenous communities, are being significantly advanced through the inclusion of sponge aquaculture research in AIMS@JCU (see Contribution to National Research Priority Goals, p 35). The collaboration between AIMS and JCU researchers is also providing new training opportunities for postgraduate students and indigenous communities.
- ▶ During the year, international pharmaceutical company, Faustus Forschungs Pharmaceutische Compagnie of Austria/Germany established a collaborative partnership with AIMS; it was based on leads generated from Australian marine biodiversity under the newly established *Queensland Biodiscovery Act*. Collaborative research is now progressing at AIMS to develop purified compounds of anti-tumour active leads for preclinical trial.

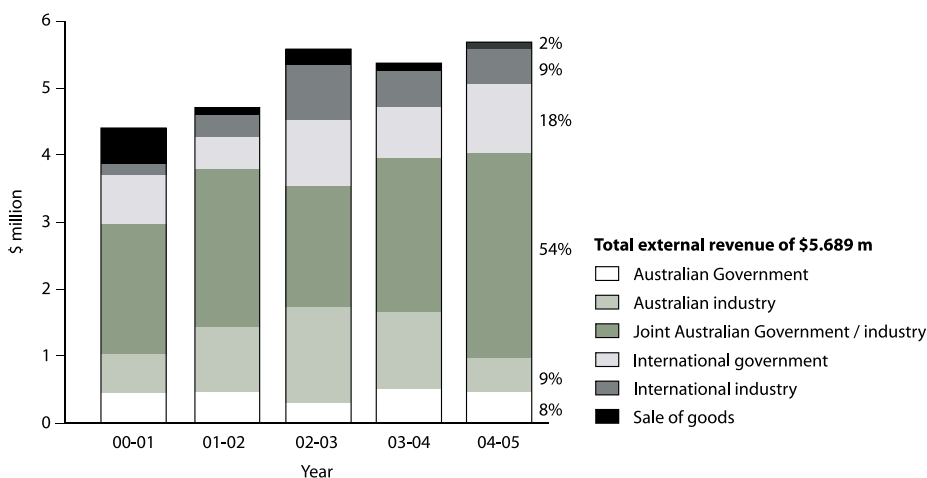
### RESEARCH SERVICES, SPECIALISED CONSULTING

AIMS occupies a unique and highly relevant research niche, bridging the gap between the pure, 'blue sky' research found at Universities and the applied research of State agencies, with a strong tactical and strategic relevance for Australia's tropical marine estate. The work is of direct value to stakeholders such as marine resource managers, while, at the same time, being appropriate for publication in the world's best journals as contributions to global understanding of natural resource phenomena and their impact. Of growing importance is AIMS' contribution to policy development, with research and development experience being used to ground-truth new legislation in environmental and commercial sectors. AIMS' contribution in this area ranges from advice on genetic identification of stingers that enables better management of the risk they present, to provision of practical experience to underpin Access and Benefit Sharing legislation that enhances investment in Australian marine biodiscovery and development of new biotechnology industry nationally. AIMS@JCU bridges gaps in education and training by using novel research platforms. Cadetships and traineeships, research collaborations, commissioned applied research and joint ventures all form part of AIMS research and consultative services.

### EXTERNAL EARNINGS FOR RESEARCH SERVICES

During the reporting period, the Institute achieved external revenue of \$5.689 million, a 6% increase on 2003–04 year. This is the highest level of external revenue over the last five years and represents a growth in co-invested, collaborative research which continues to provide the majority of external revenue.

A variety of sources contribute to the Institute's external revenue, 27% of which are from overseas, reflecting its strong international linkages. However, while revenue from Government-industry sources has continued to increase there has been a drop in funding directly from industry which now represents 18% of external earnings.



## ADOPTION BY USERS OF PRACTICES, INSTRUMENTS AND PROCESSES

- ▶ The Bureau of Meteorology uses the AIMS Weather Station readings every day for its weather forecasts. Also, Channel 9's Local NEWS gives nightly wind readings from the AIMS weather stations. AIMS weather information is frequently incorporated into Townsville morning radio programmes for the safety information of local boat users.
- ▶ GBRMPA uses AIMS LTMP monitoring data to track the status of reefs in the GBRWHA and includes these data directly as one of its Key Performance Indicators.
- ▶ AIMS, as part of CRC Reef, took a leading role in the development of a benchmark report into the status and trends in water quality and ecosystem health in the GBRMP. The report has been adopted for the RWQPP Monitoring Programme that is run by the GBRMPA and funded by the Natural Heritage Trust. AIMS is also a member of the consortium of research providers that will track changes in water quality in the GBR lagoon. The consortium also includes CSIRO, QDNRM, QDPI&F, Sea Research, and UQ.
- ▶ Results from the collaborative Seabed Biodiversity Project were used by QDPI&F to develop a set of indicators for use in fisheries risk assessments required under the *EPBC Act* (1999) to demonstrate sustainability. Information on catches of *syngnathids* (pipefishes) were contributed to an annual report from the Queensland government to the Commonwealth DEH because these species are listed under Part 13A of the Act, which controls international trade in wildlife sourced from State and Commonwealth waters.
- ▶ Research to assess the impact of sediment runoff on the health of Micronesian coral reefs provided training opportunities for local scientists and has generated new information that has been transferred to local communities and government. This work has directly influenced marine protection in the region including: Palau where efforts at community education resulted in Palau legislating protection for mangroves within the Ngerikiil watershed; and Pohnpei where legislation is underway for watershed-coral reef management.

## Anti-cancer drug discovery – growing marine capability for Australia

Over a third of the world's marine-based anti-cancer leads originate from Australasia despite the fact that less than 5% of related exploration and development effort occurs in the region.

Building on its ecological research capabilities, AIMS is developing the skills and infrastructure to screen compounds taken from samples of Australia's extraordinarily diverse marine environment. This effort has been accompanied by the development of agreements to facilitate access to biodiversity for the purposes of biodiscovery, and to share any benefits that may result from successful commercialisation – agreements that are now being used as models nationally and internationally.

Information about AIMS' collection of over 20,000 samples is stored in a relational database that records biological and physical detail of each sample, including the taxonomic name, abundance, neighbour ecology, microenvironment and location, together with information on sample size, symbiotic microbiology, pharmacological or agrichemical profile, and natural products chemistry. The database increases the opportunity to identify compounds likely to be of interest to the pharmaceutical or commercial industries. AIMS recently used this approach to identify a potential drug lead based on an Australian sponge, and a number of compounds are now being investigated by the National Cancer Institute.

Knowledge of the taxonomy and biogeography of Australia's marine biodiversity, an understanding of the chemical ecology of our marine ecosystems, world class capabilities, and smart tools for searching through specific bioactive properties, jointly give Australia a competitive edge in the drive to identify and develop new bioactive compounds. AIMS now plays a globally significant role in a new era of drug development based on sustainable discovery and use of genomic tools.

- ▶ Satellite imagery received at AIMS has been used to generate national sea surface temperatures products that are used to support some of the national ocean modelling work jointly undertaken by CSIRO, the Bureau of Meteorology and the Australian Navy. Recently, GBRMPA has used the composite SST product that was heavily based on these AIMS data in order to develop a management tool for indicating reefs most likely to bleach due to temperature stress. Daily satellite SST maps were an integral part of the GBR bleaching-monitoring products delivered to GBRMPA during the 2004-05 summer.
- ▶ Research outputs from the Prawn Domestication project, which is carried out in collaboration with three Queensland based companies and the Australian Prawn Farmers Association (APFA), have been transferred to industry. A commercialisation plan has also been developed with industry, which has benefited from the delivery of domesticated larvae, egg washing protocols and tools to identify stress/viral infection relationships.



- Database management software developed by AIMS to support analysis of prawn breeding studies is now being used as a template for prawn domestication programmes in Australia.
- Indigenous communities of Arnhem Land, Torres Strait and the Palm Islands are participating in efforts to develop bath sponge aquaculture projects in their communities. In addition to training and regular liaison with the communities, AIMS has provided advice on the Terms of Reference for the engineering tender to design and develop technical drawings for the first sponge farm in the Palm Islands (see boxed text, p 65).

### CONTRIBUTION TO AUSTRALIA'S RESEARCH FUTURE THROUGH TEACHING AND TRAINING

AIMS staff continued their strong affiliation with universities, and their contribution to undergraduate and postgraduate teaching and research training of Australia's future scientists. In 2004-05, AIMS staff held 16 adjunct appointments at universities, including James Cook University, the University of Queensland, the University of Western Australia, Central Queensland University and the University of Manitoba. This represents an increase of nearly 50% over last year.

During the year, AIMS co-supervised 69 postgraduates, 32 of whom were primarily resident on an AIMS site and 19 (from 10 universities) whose projects were reliant on the use of the AIMS research vessels. This includes eight staff members enrolled in research training degrees. Institute staff were also involved in the training of 17 occupational trainees.

	2002-03	2003-04	2004-05
AIMS staff enrolled in postgraduate studies	9	9	8
Students working at AIMS supervised by AIMS staff	21	21	24
Students working externally supervised by AIMS staff	28	35	37
Occupational trainees (Australia and overseas)	26	12	17

### CONTRACTS SUCCESSFULLY COMPLETED

During the reporting period, AIMS successfully completed 37 contracts and commenced 29 new research contracts. The Institute provided 107 reports to external contract clients, with the majority being completed within the time specified by the clients. The quality and usefulness of the contracts is reflected in the high percentage of repeat contracts entered into with pre-existing clients.

### POLICY INPUT

AIMS has increased its engagement at State and Federal levels in responding to eleven requests for formal policy submissions. These have been predominantly in the areas of biotechnology, commercial linkage, and marine stakeholder review. AIMS is now increasingly sought after to provide practical evidence to substantiate the relevance of scientific comment and to advise on

how legislation or funding frameworks can be improved to increase the quality of research and enhance commercial opportunity. During 2004-05, policy input was provided into:

- ▶ National Oceans Office Program Review;
- ▶ International Science Linkages Discussion Paper;
- ▶ Joint submission (through the Oceans Policy Advisory Group) to the National Collaborative Infrastructure Strategy;
- ▶ National Health and Medical Research Council (NHMRC) *Guidelines for Managing Risks in Recreational Water* for Australian marine and fresh water environments;
- ▶ A comparative analysis of the Cape Range-Ningaloo Reef area with other similar properties for the Australian Government Department of the Environment and Heritage;
- ▶ Submission on the Draft Management Plan for Ningaloo Marine Park;
- ▶ The Queensland Government's draft Code of Conduct for compliance with their *Biodiscovery Act*;
- ▶ Submission on *Australian Technological Innovation and Pathways to Commercialisation* to the House of Representatives Standing Committee on Science and Innovation;
- ▶ FRDC review and research priorities;
- ▶ Reconciliation Awards recommendation; and,
- ▶ Regional Partnerships submission

AIMS also contributes to the development of policy through the provision of advice and its linkages with decision-making bodies and submission of key reports. Examples of such work include:

- ▶ Libby Evans-Illidge provided extensive advice on Marine Biodiscovery to DEH, Queensland Department of State Development, Trade and Innovation (DSDTI), WA Fisheries and Northern Territory Government, as well as to international agencies, such as the Convention on Biological Diversity and its relevant working groups.
- ▶ Dr Clive Wilkinson provided advice to the Australian Government regarding capacity-building needs for communities along the Andaman Sea coastline and was appointed as a consultant by UNDP to advise the Government of Thailand on post-tsunami rehabilitation.
- ▶ Co-authorship by AIMS staff of the benchmark report *Bioaccumulation Monitoring* as part of the GBRWHA Reef Water Quality Protection Plan.
- ▶ Ongoing advice to government regarding global climate change was provided by Dr Janice Lough, with an additional contribution to the Australian Climate Change Science Brochure.
- ▶ Input to DEST Draft Response to the Senate Committee Report *Turning back the tide - the invasive species challenge*.
- ▶ AIMS' participation in the Science Working Team for Global High Resolution Sea Surface Temperature.

## **Indigenous Communities soak up AIMS sponge aquaculture**

AIMS' sponge aquaculture science and technology is providing the foundation for a new industry based on the commercial bath sponge market, a high value market in which there is immediate demand. This business opportunity is being explored with indigenous collaborators in three locations: Palm Island, Torres Strait and Arnhem Land.

Requiring relatively little maintenance, sponge aquaculture is ideally suited to remote locations. Sponges are propagated from cuttings and grown out on lines or racks. Good growth occurs without intensive feeding or upkeep; post-harvest processing is straightforward; and the final product is easy and cheap to transport, requiring no refrigeration.

As a first step, surveys were conducted to identify abundant populations of target species. Three new species of bath sponges have been identified and, in collaboration with indigenous partners, are in the process of being named. After identifying ideal conditions and structures for sponge growth survival and quality, researchers have refined farming methods.

The dynamics of wild populations, including reproduction and larval dispersal patterns, feeding ecology, population genetics, and recovery of donor sponges after collection of seed material, have been under investigation. Potential environmental impacts are also being assessed in order to develop the knowledge needed for sustainable management of this potential industry.

By establishing formal collaborative relationships with community-based organisations, by creating the opportunity for hands-on indigenous participation in the research, and by linking with relevant formal training providers, technology has been successfully transferred to indigenous communities.

Ultimately, prior to the establishment of commercial scale activity, AIMS science will be tested against business and market realities.

Coolgaree CDEP, the proponents of the Palm Island project, have concluded a detailed market and business plan, and anticipate making application to environmental regulators in late 2005 for permission to establish Australia's first sponge farm.

- ▶ Dr Chris Battershill represented AIMS on the Prawn Domestication Steering Committee, along with representatives from FRDC, APFA, and the prawn farming industry. A focus this year was development of a commercialisation plan for the industry.
- ▶ Dr Lyndon Llewellyn represented AIMS on Australian National Toxin committees, which have international engagement.
- ▶ Lindsay Trott provided expert advice to Queensland Environmental Protection Agency Northern Region during discussions regarding an aquaculture development and the viability of intertidal mangroves in far north Queensland.
- ▶ AIMS maintains strong representation on the Boards of CRC Reef and CRC Torres Strait (a supplementary program in CRC Reef).

## CUSTOMER FEEDBACK

AIMS recognizes that the ultimate test of its success lies in the views of its customers across a broad spectrum. Accordingly, it closely monitors customer feedback. During 2004-05, it continued to receive very positive manifestations of support. For example:

- ▶ AIMS weather station services continued to earn high praise. Greg Connor (Bureau of Meteorology, Townsville) provided input into the AWS Users Survey. The Bureau is a significant user of AIMS weather data. To quote: "We use the half-hourly output from your stations a lot. Our network is centred along coastal towns and doesn't cover the offshore reefs. We are grateful for actual winds [data] within our coastal forecast area."
- ▶ The head and delegates of the Japan BioIndustries Association returned to participate in workshops at AIMS in order to expand AIMS/Japan biotechnology alliance and opportunity.
- ▶ The Hons. Mike Reynolds, Lindy Nelson-Carr, and Craig Wallace provided letters of support for AIMS Queensland Smart State bids.
- ▶ DEH invited AIMS to engage in the first test case for development of an Access and Benefit Sharing Agreement concerning the Commonwealth marine estate.
- ▶ The AIMS Open Day was hailed a success by AIMS visitors and staff alike. There were numerous reports from volunteers on the day and in the weeks that have followed, of unsolicited, and overwhelmingly positive, feedback from visitors including the Queensland Governor.
- ▶ The following VIPs and agencies, amongst others, visited and subsequently praised AIMS: Craig Venter of The Venter Institute; Garth Copcutt, British High Commissioner; Murray Hird, DBIRD; NIWA delegation; Simon Bennison, NAC; Chinese delegation; Judy Stewart, GBRRF; Corinne Tomlinson, Phonpei Ambassador; Japan Biotechnology Association delegation; Dave Newman, NCI; Francis Michaelis, NOAA; Sean Sullivan, DEH; Papua New Guinea Delegation; Badu Island Council; Helen Horn, British Consul General; John Honeycomb, NQACC.

## Decline of the world's coral reefs

AIMS coordinates the Global Coral Reef Monitoring Network (GCRMN), and produces its *Status of Coral Reefs of the World* assessment reports. The 2004 report was launched in Washington DC in December 2004 by AIMS scientist Dr Clive Wilkinson, GCRMN coordinator and report editor, with support from the US State Department, the NOAA and WWF. The report shows a decline in the status of coral reefs worldwide since the last detailed assessment in 2000. The two-volume 580 page report, which includes contributions from 240 authors, estimates that 20% of the world's reefs have been damaged beyond immediate recovery. Another 25% are threatened with similar damage unless human pressures are decreased. The report is available at <http://www.aims.gov.au/pages/research/coral-bleaching/scr2004/index.html>.

The global study also reports that Australia is leading the world by a large margin in the conservation of coral reefs. The conclusion was based on Australia's initiative to declare 33% of the Great Barrier Reef as marine sanctuaries. Australia's intention to improve the Reef's water quality through better management of the land that drains into it also contributed to the nation's good standing.

The *Status of Coral Reefs of the World: 2004* provides the most up-to-date assessment of global coral reefs, including assessments of all the countries affected by the recent tsunami. Following the tsunami, AIMS responded and continues to respond to requests for advice on survey methods and reef management and rehabilitation options in many countries, including Thailand, Sri Lanka, India, Indonesia and the Seychelles (see p 8).

AIMS will take a leading role in the rapid preparation of an addendum to the *The Status of Coral Reefs of the World: 2004* on the impacts of the tsunami. This will include advice on rehabilitation and management options for impacted reef systems.



Photo: R. Berkelmans

*Coral bleaching continues to be a major threat to coral reefs globally but reports show that reefs can recover provided the major human pressures are removed or controlled.*

## LICENSING, PATENTING AND SPIN-OFFS

### PATENTS

During 2004–05, AIMS managed an Intellectual Property (IP) portfolio containing 63 patents across ten families and a diverse range of technologies. No new patent applications were made in the period. In accordance with AIMS IP policy, the portfolio is managed to optimise the social, environmental and economic benefits arising from its most valuable asset, Intellectual Property.

### COMMERCIAL DISCLOSURES

Commercial disclosures are Confidentiality Disclosure Agreements and Material Transfer Agreements executed with potential research collaborators and partners; they formalise and protect the exchange of confidential information between the parties, and often preface the development of commercial arrangements. AIMS made 14 commercial disclosures in the reporting period.

### COMMERCIAL ARRANGEMENTS

Commercial arrangements are defined as commercial arrangements executed by the Institute. These arrangements include Joint Venture Agreements, Research Service Agreements, Research Collaboration Agreements, Commercialisation Agreements (such as Licence Agreements), Publishing Agreements and Consulting Service Agreements. AIMS executed 53 new commercial arrangements in the reporting period.

### START-UP COMPANIES

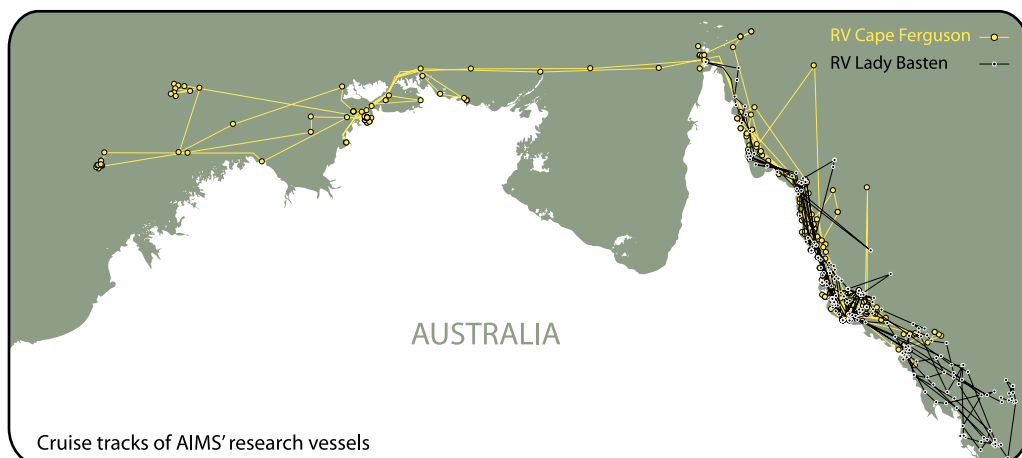
AIMS three spin-off companies continued to operate, and with AIMS assistance have pursued product development in their respective technological fields. The spin-off companies include Cleveland Biosensors Pty Ltd, a spin-off resulting from AIMS and JCU collaborative research; WetPC Pty Ltd; and Sunscreen Technologies Pty Ltd. There were no new start-ups for the reporting period.



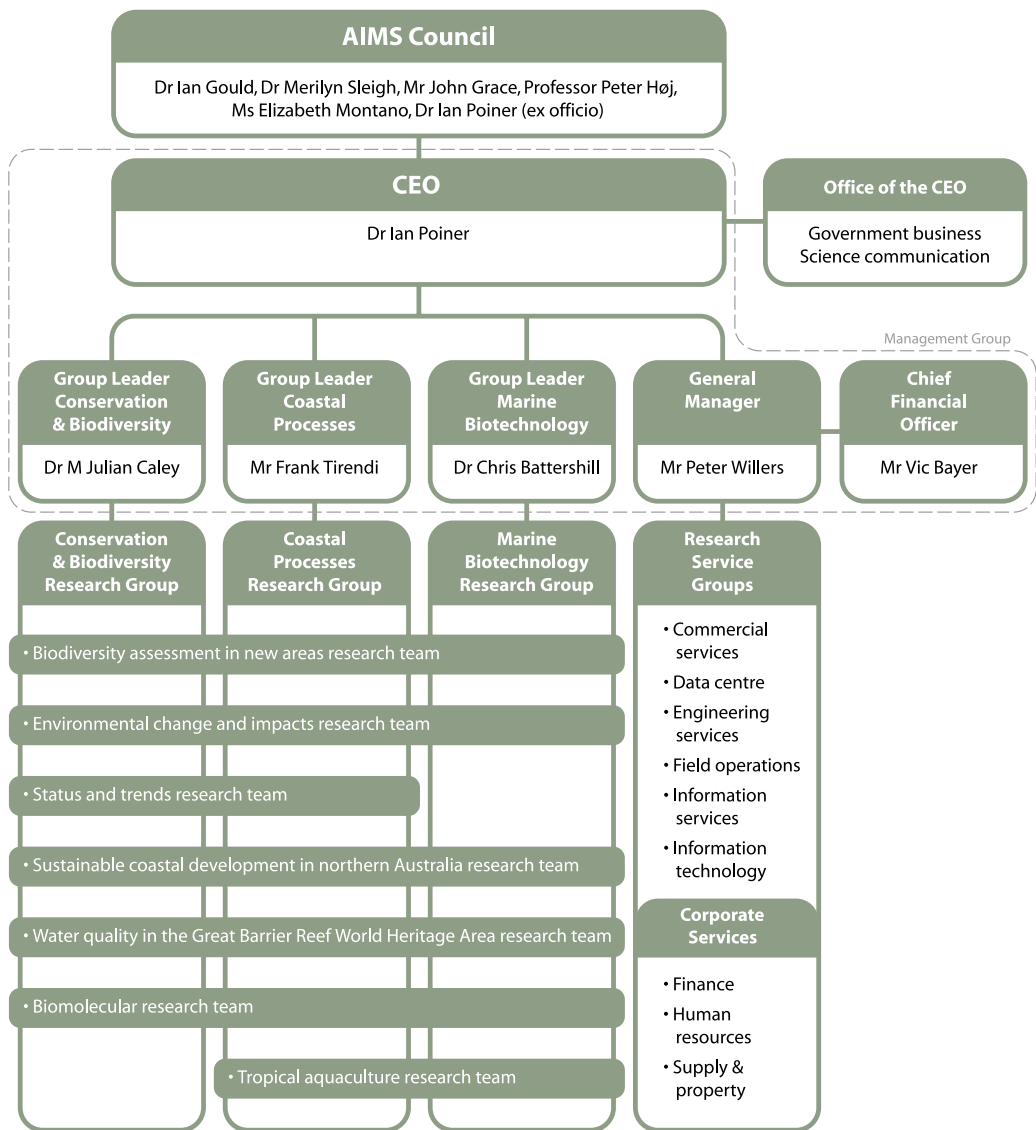
## Role, legislation and minister

### ROLE, LEGISLATION AND MINISTER

The role of AIMS is to carry out research and development in relation to marine science and technology, and to encourage and facilitate the application and use of the results of these activities. The Institute is a Commonwealth statutory authority established by the *Australian Institute of Marine Science Act 1972*. The functions and powers of AIMS are set out in Sections 9 and 10 of the Act (see Appendix 1, p 133). Amendments to the Act during the year (see p 20) did not change the powers and functions of the Institute. The Minister with responsibility for AIMS during the reporting period was the Hon. Dr Brendan Nelson MP, Minister for Education, Science and Training.



ORGANISATIONAL STRUCTURE OF THE INSTITUTE



## Staffing and structure

### STAFFING AND STRUCTURE

The total number of staff employed by the Institute as at 30 June 2005 was 167, by head count. When taking into account employment status of full time, part time and casual, the full time equivalent (FTE) value was 155.6 (157.7 in 2003-2004). All members of staff are employed under the *Australian Institute of Marine Science Act 1972*. In addition to those paid from Australian Government appropriation, the Institute periodically employs staff to work on projects funded from external sources.

The following tables provide a breakdown of staff employed and EEO status:

	Female	Male	Total
Research Scientists	8	28	36
Research Projects	24	42	66
Other (Research and Corporate Services)	27	38	65
Total Staff	59	108	167

Note: One Research Scientist is currently on secondment to another organisation.

Aboriginal & Torres Strait Islander	0.6%
Non English-speaking Background	8.98%
Staff with Disability	5.39%
Women	35.33%

The work of the research staff is supported by a variety of professional research support staff skilled in data management, commercial services, IP portfolio management, engineering services, field operations, information technology, information services and science communication. Corporate Service Groups deliver financial, human resource, supply and property, and general management services to all AIMS Staff.

The Management Group is made up of the CEO, the General Manager, the leaders of the three Research Groups and the Chief Finance Officer.



Photo: J. de Rooy

*The AIMS Council: Dr Ian Poiner, Dr Marilyn Sleigh, Dr Ian Gould,  
Mr John Grace, Ms Elizabeth Montano and Professor Peter Høj*

## Corporate Governance

AIMS has in place a comprehensive system of corporate governance practices designed to provide control, disclosure and accountability for the Institute's activities. These practices derive principally from the provisions of the *Australian Institute of Marine Science Act 1972* (AIMS Act) and the *Commonwealth Authorities and Companies Act 1997* (CAC Act).

### THE MINISTER

The Institute meets its responsibilities to the Australian Government through the Minister for Education, Science and Training the Hon Dr Brendan Nelson.

### THE COUNCIL

Under the AIMS Act, the Council (or Board) of the Institute comprises, a part-time Chairperson, the full-time CEO and four (soon to be five) other part-time members. Council members are appointed by the Governor General and at least three members must possess scientific qualifications. Appointments can be up to five years and reappointment is permissible. The CEO can hold office for a period not exceeding seven years and is appointed on the recommendation of the Council. The members of Council (see details on following pages) bring complementary skills and experience to governance of the Institute. The Remuneration Tribunal determines the level of remuneration and allowances paid to part-time Board members.

### ROLE OF THE COUNCIL

Council sets the Institute's key objectives and research strategies via a three-year research plan. The plan takes into consideration the National Research Priorities and stakeholders priorities. Progress against the plan is reported to the Council, on a continuous basis, by the Institute. The Minister is also provided with *ad hoc* advice on developments of significance, as appropriate.

The CAC Act requires the Board to comply with certain accountability and corporate governance principles, including:

- ▶ the maintenance of the Audit Committee;
- ▶ specific financial and reporting provisions;
- ▶ disclosure of Board Member's personal interests; and,
- ▶ provision of indemnities and indemnity insurance in certain circumstances.

During 2004-05, all CAC Act requirements were met.

## COUNCIL MEMBERS

***Dr Ian Gould BSc (Hons), PhD, FAusIMM***

***Chairman - Term 01/01/ 2005 – 30/06/ 2007***

***Term as Council Member - 01/07/2002 – 31/12/2004***

Dr Ian Gould brings to AIMS high-level business, research and policy expertise, as well as familiarity with environmental issues. He has over 36 years experience in the minerals industry and is currently Chairman of the AJ Parker Cooperative Research Centre for Hydrometallurgy, the Australian Centre for Minerals Extension and Research, and the Australian Biological Resources Study Advisory Committee. Dr Gould is also President of the Australasian Institute of Mining and Metallurgy, Chair of St Andrew's Hospital Board, Vice-President of the Royal Flying Doctor Service (Central Operations) and a member of SA National Parks and Wildlife Council and of the CSIRO Minerals and the Energy Advisory Committee.

***Dr Merilyn Sleigh BSc (Hons), PhD, Dip Corp M'ment, FTSE, FAICD***

***Term as Council Member - 30/07/1988 – 30/06/2005***

Merilyn Sleigh studied pharmacology at Sydney University and worked in the area of molecular genetics for her PhD. After two years with the pharmaceutical industry, she joined CSIRO, working for over 20 years in Australia and overseas on projects of relevance to the pharmaceutical and agricultural sectors, as well as occupying senior roles in science management. In 1993, she joined listed pharmaceutical company, Peptech, as its R&D Director, before moving to the University of New South Wales in 1997, as Dean of the Faculty of Life Sciences, with strategic responsibility for teaching and research activities ranging from psychology to food science. In 2001 Dr Sleigh became CEO of a start-up Biotechnology Company, Evogenix Pty Limited. Dr Sleigh also maintains an involvement with Venture Capital groups investing in the Biotechnology industry, acts as a Scientific adviser to SciCapital Pty Limited and is a Director of Australia Biotechnology and Healthcare Fund No 3.

***Mr John Grace BSc Applied Chemistry, FTSE, FAICD***

***Term as Council Member - 16/12/2004 – 15/12/2009***

Mr Grace has worked in the biotechnology industry for most of his career, including 30 years with Biotech; 20 years of that time as CEO. In addition to general management, his main expertise is as a negotiator in the area of intellectual property for small and large companies involved in the commercial development of leading edge science. He has applied this experience in organisations ranging from Burns Philp to CSIRO and Amrad. In the latter company, he served as Managing Director for 11 years. Mr Grace is an experienced director of listed and private companies, and is currently engaged in a number of activities involving strategic advice and capital-raising in the field of biotechnology, including with his consultancy company, iBIO Pty Ltd; Nextec Biosciences Pty Ltd; and MuriGen Pty Ltd. He is a Director of Melbourne Ventures Pty Ltd, the University of Melbourne's Commercialisation Company. Mr Grace is



a past member of the Australian Research Council, a current member of the Council of the Academy of Technological Sciences and Engineering and Chairman of the Victorian Division. He has been a member of the Clunies Ross Foundation Award Committee for the past 14 years. Mr Grace was formerly a member of the Victorian Premiers' Knowledge Innovation Science and Engineering Task Force, Director of the Biomolecular Research Institute, a member of the Industry Research and Development Board, President/Director of the Australian Biotechnology Association, Director of Cerylid Ltd, a member of the Board of Management of the Cellular Growth Factors CRC, and a member of the Australian Government Biotechnology Consultative Group (BIOCOG).

***Professor Peter Høj MSc, PhD, FTSE***

***Term as Council Member - 01/01/ 2005 – 31/12/2009***

Professor Høj is CEO of the Australian Research Council and a Fellow of the Australian Academy of Technological Sciences and Engineering. From 1999-2004, he was a private member of the Prime Minister's Science Engineering and Innovation Council (PMSEIC). Prior to his appointment to the ARC, he was Managing Director of the Australian Wine Research Institute. Professor Høj was educated at the University of Copenhagen, majoring in Biochemistry and Chemistry. He has a Master of Science Degree in biochemistry and genetics and a PhD in photosynthesis. Since arriving in Australia in 1987 he has worked as a Lecturer and Senior Lecturer in Biochemistry at La Trobe University and as Professor of Viticultural Science and Oenology at the University of Adelaide. Professor Høj has been a Board member of several research-related entities.

***Ms Elizabeth Montano B.A. LLB.***

***Term as Council Member - 16/12/ 2004 – 15/12/2009***

Ms Montano currently holds various non-executive positions, including Chairman of the Board of Centrelink, member and former Chairman of Centrelink's Audit and Risk Committee, member of the Executive Management Board of the Australian Federal Police and member of its Security and Audit Committee, member of the Council and Audit and Finance Committee of AIMS, member of the Advisory Committee of the Transnational Crime Centre at the University of Wollongong.

She was formerly Director (CEO) of the Australian Transaction Reports and Analysis Centre (AUSTRAC), Australia's anti-money laundering regulator and financial intelligence Unit; Head of Australia's Delegation to the OECD-based Financial Action Task Force on Money Laundering; a member of the Board of CrimTrac; a member of the Heads of Commonwealth Law Enforcement Agencies Group (HOCOLEA); Chairman of various HOCOLEA Groups, including the Action Group on the Law Enforcement Implications of Electronic Commerce; the Director

responsible for corporate and fund raising regulatory policy with the Australian Securities Commission (now the Australian Securities and Investments Commission) and a senior banking and finance private sector consultant and solicitor with Mallesons Stephen Jaques.

**Dr Ian R. Poiner BSc (Hon), PhD**

**Term 12/07/2004 - 11/07/2009**

Dr Ian Poiner is the Chief Executive Officer. Dr Poiner has significant experience in strategic development and planning of science both as a practicing scientist and at the organisational level. This is reflected in successful large-scale, multi-disciplinary research projects and the establishment of national and international research programs to support the sustainable use, conservation and management of marine ecosystems. Dr Poiner's scientific background is research into tropical fisheries and ecological systems including Australia's northern Great Barrier Reef, Torres Strait and the Gulf of Carpentaria. He has also worked abroad in Jamaica, Papua New Guinea and Southeast Asia. Dr Poiner serves on a number national and international committees. He is currently a member of the International Scientific Steering Committee of the Census of Marine Life. It is a ten year international research program to assess and explain the diversity, distribution and abundance of marine organisms throughout the world's oceans. The CEO is responsible for managing the day-to-day affairs of the Institute.

Mr Norbury Rogers AO, BCom, AAUQ, FCA, FAICD was Chairman of Council from 30 December 1998 with his term concluding on 31 December 2004.

**COUNCIL ATTENDANCE**

	13-14 Sept 2004 Townsville	7-8 Nov 2004 Townsville	7-8 March 2005 Townsville	21-22 June 2004 Townsville
Mr Norbury Rogers AO	✓	✓		
Dr Ian Gould	✓	✓	✓	✓
Dr Marilyn Sleight	✓	✓	✓	✓
Mr John Grace			✓	✓
Prof. Peter Høj			✓	✓
Ms Elizabeth Montano			✓	✓
Dr Ian Poiner (CEO)	✓	✓	✓	✓

not applicable

**AUDIT AND FINANCE COMMITTEE**

The Audit and Finance Committee, is a formal sub-committee of the Council, established to assist Council in the discharge of its responsibilities. The Committee focuses on areas of financial reporting, internal controls, risk management and auditing. The Committee comprises members

outside the Institute's management structure, but has unlimited access to both the internal and external Auditors and to the members of the Management Group.

As at 30 June 2005, the Audit Committee was Mr Roy Peterson (Independent Member); Dr Ian Gould (Council Member) and Ms Elizabeth Montano (Council Member). The Institute's Chief Finance Officer, Mr Vic Bayer, provides secretarial support to the Audit Committee. ANAO's Chief Executive Officer, General Manager and representatives, as well as internal auditors have a standing invitation to attend each meeting.

The Audit Committee reviews:

- ▶ annual financial statements, before their consideration and adoption by the Council;
- ▶ the clarity and quality of the Institute's financial policies, practices and disclosure;
- ▶ internal and external auditor plans, reports and performance;
- ▶ significant existing and emerging risk and mitigation activities;
- ▶ the adequacy and effectiveness of internal controls;
- ▶ AIMS compliance with laws and regulations;
- ▶ related party transactions; and,
- ▶ corporate governance and fraud control activities.

#### AUDIT COMMITTEE ATTENDANCE

	9/9/04	22/4/05	7/6/05	19/6/05
Mr Roy Peterson (Commenced 22/4/05)		✓	✓	✓
Mr Ian Gould	✓	✓	✓	✓
Mr Norbury Rogers (Term Expired 30/12/04)	✓			
Ms Elizabeth Montano		✓	✓	✓
Mr Robert Tardiani (Term Expired 30/12/04)	✓			
Mr John Zabala	✓	✓		
Dr Ian Poiner (CEO)		✓	✓	✓
Mr Peter Willers (Acting CEO)	✓			
Mr Vic Bayer	✓	✓	✓	✓

 not applicable

## **FRAUD CONTROL**

The Institute has completed a fraud risk assessment and is in the process of reviewing its Fraud Control Plan in accordance with the Commonwealth Fraud Control Guidelines.

## **RISK MANAGEMENT FRAMEWORK**

During the year, the Council approved the implementation of a risk management framework. The Audit Committee has been given the responsibility of overseeing the implementation of the integrated risk management framework. It takes into consideration both strategic/commercial risk and operational and compliance risks.

## **INDEPENDENT PROFESSIONAL ADVICE**

Council has the right to obtain, at the Institute's expense, relevant independent professional advice in connection with the discharge of its responsibilities.

## **DIRECTORS INTERESTS**

Members of the Council disclose their connections with other commercial entities, such as boards, and adhere to a policy of declaring actual or potential conflicts of interest in compliance with Institute policy. This policy is consistent with the CAC Act (Section 21). Any 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, must declare the existence and nature of the interest, whereupon Council decides appropriate action. Similarly, the members of the Management Group are obliged to declare actual or potential conflicts of interest.

## **INTERNAL AUDIT**

AIMS maintains an independent internal audit service to help the Institute meet its objectives by applying a systematic, disciplined approach to evaluating and improving control and governance processes.

The internal audit process is required by the Council to direct a comprehensive program of internal auditing within the Institute, and has full and unrestricted access to all functions, property, personnel records, accounts, files and other documentation.

The internal audit program is subject to approval by the Audit Committee with the results, progress and performance of internal audit being presented quarterly to the management group, the Audit Committee and external auditors.

Pickard Associates perform the internal audit function for the Institute. The firm was appointed in 2003 for a period of four years to 30 June 2007.



## EXTERNAL AUDIT

Under the CAC Act the Auditor General is the external auditor for the Institute. The Australian National Audit Office has contracted the audit work to Ernst & Young. The Audit Committee reviews the Australian National Audit Office audit plan and meets with the external auditor prior to recommending financial statements to be signed by the Board.

## INDEMNITIES AND INSURANCE PREMIUMS FOR OFFICERS

During 2004-05, there were no known liabilities to any current or former officers. During the reporting period, no premium was paid (or was agreed to be paid) against a current or former officer's liability for legal costs. AIMS paid premiums for the Directors and Officers Insurances required under the CAC Act.

During the year, the Institute used Pickard Associates and Spruson and Ferguson for sub-contracting and consulting purposes.

## STAFF CONSULTATION

Staff consultation occurred through a range of fora. The Joint Consultative Committee met six times in 2004-05. This committee provides a forum for discussion and consultation between management and staff representatives.

## CONSULTANCY ADVICE

AIMS frequently seeks independent advice from consultants. During 2004-05, the Institute awarded consultancies to:

- ▶ Pickard Associates (fraud risk assessment);
- ▶ Dimension Data (security penetration test for Information Technology); and
- ▶ Spruson & Ferguson (review of joint ventures).

## SUBCONTRACTORS

Sub-contractors are selected on the basis of quality, value for money, and availability. Tenders are required for services or products with a value greater than \$60,000. The Tender Board must approve exemptions from public tendering in writing. Consistent with Section 21 of the CAC Act, Council members and staff cannot be involved in decision-making about subcontractors connected to them or to an immediate family member.



Photo: SRCC

*In July 2004, the Institute's Safety Induction Series, a DVD and on-line learning tool designed by AIMS staff, received a High Commendation in the Safety, Rehabilitation and Compensation Commission's 2004 Safety Awards. The key strength of the package is its capacity to provide a range of safety inductions for incoming staff and visitors before they arrive at the Institutes workplaces, including remote sites such as research vessels at sea. Above, the Hon. Kevin Andrews, MP, Minister for Employment and Workplace Relations, presents the award to AIMS Human Resources Manager Leone Gregory and OHS&E Officer Liam Dee.*



## Public accountability

### MINISTERIAL DIRECTIONS AND APPROVALS

In December 2004, the Minister for Finance and Administration issued the Finance Minister's (CAC Act Procurement) Directions 2004 under subsection 47 A (2) of the CAC Act 1997. Ministerial approval was sought to enter into 2 contracts under Section 42 of the AIMS Act relating to construction of the ATRF and commissioning of the fibre link between the Australian Institute of Marine Science and the James Cook University.

### JUDICIAL DECISIONS AND REVIEWS BY OUTSIDE BODIES

No judicial decisions related to AIMS and no reviews of AIMS by outside bodies occurred during the reporting period.

### OMBUDSMAN

No issues relating to AIMS were referred to the Commonwealth Ombudsman.

### INVESTING AND FINANCING ACTIVITIES

The Institute invested its surplus money in accordance with Section 18(3) of the Commonwealth Authorities and Companies Act. The investments were on deposit with several banks.

### OCCUPATIONAL HEALTH AND SAFETY

The OH&S Agreement between AIMS and its staff representatives has been signed by all parties. The Agreement gives a mandate to the OH&S Committee and a work schedule to the Workplace Health and Safety representatives.

During the year, 32 incidents were reported, with two of these resulting in time lost from the workplace and two compensation claims accepted by Comcare.

There were no formal reactive investigations conducted by Comcare under Section 29 of the OH&S Act. No Provisional Improvement Notices were issued by the Health and Safety Representatives, nor were any notices issued by Comcare under Section 45, 46 or 47 of the OH&S Act.

### OH&S TRAINING

During the year, 321 Institute Safety Inductions were completed, for staff, contractors and visitors. OH&S training in first aid, CPR/oxygen resuscitation, dive rescue, diver supervision, radiation safety and fire safety was delivered to 83 course attendees.

## RADIATION SAFETY

The Institute continues to hold a Source Licence from the Australian Radiation Protection and Nuclear Safety Agency, and has the facility to use an X-Ray aboard the *RV Cape Ferguson*. It has also established a useful alliance with local Source Licence holders to pool resources for advice and training needs.

## GENE TECHNOLOGY

At the annual Institute Biosafety Committee meeting, required by the Office of the Gene Technology Regulator (OGTR), proposed research projects were assessed and were generally deemed to fall under the 'Exempt' category, with the exception of one 'notifiable' project to be assessed for approval by the OGTR. The regulator advised that this project was in the 'Exempt' category.

## ENVIRONMENT

The Department of the Environment and Heritage continues to advise the Institute on the implementation of its Environment Management Plan (EMP) and development of its Environment Management System. The Environment Committee, made up of both research and research services staff, is overseeing the implementation of the EMP. The committee was also tasked with the development of the Institute's Environmental Policy which, recently approved, will guide AIMS' activities so as to minimise its environmental footprint while conducting research.

The Institute uses a number of substances declared under the National Pollution Inventory of the *National Environment Protection Measures Act*, but in quantities below the current declared threshold levels; it has met the reporting requirements.

## EEO AND WORKPLACE DIVERSITY

The Institute reviewed and updated its Workplace Diversity Policy, incorporating Equal Employment Opportunity, in June 2004, with the revised policy in operation 2004-2005. The Institute acknowledges differences, and adapts work practices to create an inclusive environment in which diverse skills, perspectives and backgrounds are valued.

## HARASSMENT

The Institute has a Code of Conduct to which the Council, management 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. New Council members and staff are briefed on the Code during induction. Council members also abide by the Code of Conduct for Directors published by the Australian Institute of Company Directors.

AIMS has trained Workplace Harassment Contact Officers across the Institute; they are available to discuss, in confidence, any issues raised by a staff member. Staff have undertaken harassment awareness training and new staff are provided with this information as part of the induction process.

In 2004-05, the Institute had no formally reported cases of harassment, although Harassment Contact Officers gave advice on several occasions. Counselling from the AIMS Employee Assistance Services was obtained.

### DISABILITY STRATEGY

The Institute is committed to ensuring people with disabilities are given opportunities for independence, access and full participation. The Institute assesses cases individually, and endeavours to implement the most appropriate measures to assist people with disabilities.

All vacancies placed in the print media and on the World Wide Web clearly state that AIMS is an equal opportunity employer. The physical resources of AIMS continue to be upgraded to meet access needs for people with disabilities.

### EMPLOYEE ASSISTANCE PROGRAM

The OSA Group provides the Institute with its Employee Assistance Programme (EAP). Approximately 5% of staff accessed the counselling service, showing steady use of the service over the last four years.

### FREEDOM OF INFORMATION

During 2004-05, no requests were received under the provisions of the *Freedom of Information (FOI) Act 1982*. The statement required under Section 8 of the FOI Act, setting out documents available for inspection, is at Appendix 3.

### CUSTOMER SERVICE CHARTER

The AIMS Service Charter for dealing with clients is posted to our website. The Institute welcomes feedback on how well it is delivering our services against the standards set in this charter, and has included a feedback form on the website. Both the charter and the feedback form can be found at [www.aims.gov.au/pages/about/corporate/csc-01.html](http://www.aims.gov.au/pages/about/corporate/csc-01.html)



# Auditor General's Report

- ▶ Auditor General's Report
- ▶ Financial Statements at 30 June 2005





## INDEPENDENT AUDIT REPORT

To the Minister for Education, Science and Training

### Scope

#### *The financial statements and directors' responsibility*

The financial statements comprise:

- Statement by Directors (Members of Council) and Chief Executive;
- Statements of Financial Performance, Financial Position and Cash Flows;
- Schedule of Commitments; and
- Notes to and forming part of the Financial Statements

of the Australian Institute of Marine Science for the year ended 30 June 2005.

The directors of the Institute are responsible for preparing the financial statements that give a true and fair view of the financial position and performance of the Institute and that comply with accounting standards, other mandatory financial reporting requirements in Australia, and the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*. The directors of the Institute are also responsible for the maintenance of adequate accounting records and internal controls that are designed to prevent and detect fraud and error, and for the accounting policies and accounting estimates inherent in the financial statements.

### *Audit approach*

I have conducted an independent audit of the financial statements in order to express an opinion on them to you. My audit has been conducted in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing and Assurance Standards, in order to provide reasonable assurance as to whether the financial statements are free of material misstatement. The nature of an audit is influenced by factors such as the use of professional judgement, selective testing, the inherent limitations of internal control, and the availability of persuasive, rather than conclusive, evidence. Therefore, an audit cannot guarantee that all material misstatements have been detected.

While the effectiveness of management's internal controls over financial reporting was considered when determining the nature and extent of audit procedures, the audit was not designed to provide assurance on internal controls.

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



I have performed procedures to assess whether, in all material respects, the financial statements present fairly, in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*, including accounting standards and other mandatory financial reporting requirements in Australia, a view which is consistent with my understanding of the Institute's financial position, and of its performance as represented by the statements of financial performance and cash flows.

The audit opinion is formed on the basis of these procedures, which included:

- examining, on a test basis, information to provide evidence supporting the amounts and disclosures in the financial statements; and
- assessing the appropriateness of the accounting policies and disclosures used, and the reasonableness of significant accounting estimates made by the directors of the Institute.

#### ***Independence***

In conducting the audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate the ethical requirements of the Australian accounting profession.

#### **Audit Opinion**

In my opinion, the financial statements of the Australian Institute of Marine Science:

- (a) have been prepared in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*; and
- (b) give a true and fair view of the Australian Institute of Marine Science's financial position as at 30 June 2005 and of its performance and cash flows for the year then ended, in accordance with:
  - (i) the matters required by the Finance Minister's Orders; and
  - (ii) applicable accounting standards and other mandatory financial reporting requirements in Australia.

Australian National Audit Office



Puspita Dash  
Senior Director

Delegate of the Auditor-General

Canberra  
26 August 2005

# Financial Statements

- ▶ Statement by Directors
- ▶ Statement of Financial Performance for the year ended 30 June 2005
- ▶ Statement of Financial Position as at 30 June 2005
- ▶ Statement of Cash Flows for the year ended 30 June 2005
- ▶ Schedule of Commitments as at 30 June 2005
- ▶ Notes to and Forming Part of the Financial Statements
- ▶ Supplementary Financial Information (unaudited) for the year ended 30 June 2005

## STATEMENT BY DIRECTORS (MEMBERS OF COUNCIL) AND CHIEF EXECUTIVE

In our opinion, the attached financial statements for the year ended 30 June 2005 give a true and fair view of the matters required by the Finance Minister's Orders made under the Commonwealth Authorities and Companies Act 1997.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Institute will be able to pay its debts as and when they become due and payable.

This Statement is made in accordance with a resolution of the Directors.



Dr Ian Gould  
Chairman of Council  
25 August 2005



Dr Ian Poiner  
Chief Executive Officer  
25 August 2005

**STATEMENT OF FINANCIAL PERFORMANCE***for the year ended 30 June 2005*

	<b>Notes</b>	<b>2005</b>	<b>2004</b>
		<b>\$'000</b>	<b>\$'000</b>
<b>REVENUE</b>			
<b>Revenues from ordinary activities</b>			
Revenues from Government	5A	22,483	22,134
Goods and Services	5B	5,689	5,368
Interest	5C	985	790
Revenue from sale of assets	5D	464	501
Revenue from sale of investments	5E	-	456
Revenues from Related Entities/Joint Ventures	5F	2,696	2,142
Other revenues	5G	109	107
<b>Revenues from ordinary activities</b>		<b>32,426</b>	<b>31,498</b>
<b>EXPENSE</b>			
<b>Expenses from ordinary activities</b>			
Employees	6A	13,663	13,232
Suppliers	6B	11,327	10,726
Depreciation	6C	4,997	4,501
Grants	6D	29	187
Value of assets sold	5D	414	675
Value of investments sold	5E	0	400
Write-down of assets	6E	140	749
<b>Expenses from ordinary activities</b>		<b>30,570</b>	<b>30,470</b>
<b>Operating surplus from ordinary activities</b>		<b>1,856</b>	<b>1,028</b>
<b>Net profit</b>		<b>1,856</b>	<b>1,028</b>
<b>Total changes in equity other than those resulting from transactions with the Australian Government as owner</b>		<b>1,856</b>	<b>1,028</b>

*The above statement should be read in conjunction with the accompanying notes.*

**STATEMENT OF FINANCIAL POSITION***as at 30 June 2005*

	Notes	2005 \$'000	2004 \$'000
<b>ASSETS</b>			
<b>Financial assets</b>			
Cash	7A	189	98
Investments	7B	16,246	16,909
Receivables	7C	1,302	2,172
<b>Total financial assets</b>		<b>17,737</b>	<b>19,179</b>
<b>Non-financial assets</b>			
Buildings and improvements	8A	29,717	29,151
Plant and equipment	8B	17,930	16,402
Intangibles	8C	219	87
Inventories	8D	220	239
Other	8E	810	545
<b>Total non-financial assets</b>		<b>48,896</b>	<b>46,424</b>
<b>Total assets</b>		<b>66,633</b>	<b>65,603</b>
<b>LIABILITIES</b>			
<b>Provisions</b>			
Employees	9A	6,118	5,829
<b>Total provisions</b>		<b>6,118</b>	<b>5,829</b>
<b>Payables</b>			
Suppliers	9B	1,316	1,795
Consultancies and grants	9C	4,255	4,891
<b>Total Payables</b>		<b>5,571</b>	<b>6,686</b>
<b>Total liabilities</b>		<b>11,689</b>	<b>12,515</b>
<b>NET ASSETS</b>		<b>54,944</b>	<b>53,088</b>
<b>EQUITY</b>			
Contributed equity	10A	31,607	31,608
Reserves	10A	17,677	17,677
Accumulated profits	10A	5,660	3,803
<b>Total equity interest</b>		<b>54,944</b>	<b>53,088</b>
<b>Total equity</b>		<b>54,944</b>	<b>53,088</b>
<b>Current assets</b>		<b>16,306</b>	<b>18,013</b>
<b>Non-current assets</b>		<b>50,327</b>	<b>47,589</b>
<b>Current liabilities</b>		<b>5,271</b>	<b>7,949</b>
<b>Non-current liabilities</b>		<b>6,418</b>	<b>4,566</b>

*The above statement should be read in conjunction with the accompanying notes.*

**STATEMENT OF CASH FLOWS***for the year ended 30 June 2005*

	Notes	2005 \$'000	2004 \$'000
<b>OPERATING ACTIVITIES</b>			
<b>Cash received</b>			
Appropriations		22,483	22,112
Goods and Services		8,042	4,924
Interest		1,126	492
GST recovered		1,116	856
Receipt from related entities		1,750	6,000
Other		110	107
<b>Total cash received</b>		<b>34,627</b>	<b>34,491</b>
<b>Cash used</b>			
Grants		29	187
Employees		13,374	13,053
Suppliers		14,619	11,991
<b>Total cash used</b>		<b>28,022</b>	<b>25,231</b>
<b>Net cash from operating activities</b>	11A	<b>6,605</b>	<b>9,260</b>
<b>INVESTING ACTIVITIES</b>			
<b>Cash received</b>			
Proceeds from sale of property, plant and equipment	5D	464	501
Proceeds from sale of investments		-	456
<b>Total cash received</b>		<b>464</b>	<b>957</b>
<b>Cash used</b>			
Purchase of property, plant and equipment	8F	7,642	4,449
<b>Total cash used</b>		<b>7,642</b>	<b>4,449</b>
<b>Net cash used by investing activities</b>		<b>(7,178)</b>	<b>(3,492)</b>
<b>Net increase in cash held</b>		<b>(572)</b>	<b>5,768</b>
Cash at beginning of the reporting period		17,007	11,239
<b>Cash at the end of the reporting period</b>	11B	<b>16,435</b>	<b>17,007</b>

*The above statement should be read in conjunction with the accompanying notes.*

**SCHEDULE OF COMMITMENTS***as at 30 June 2005*

	2005 \$'000	2004 \$'000
<b>By Type</b>		
<b>Capital Commitments</b>		
Buildings	206	109
Plant and equipment <sup>1</sup>	589	3,298
<b>Total capital commitments</b>	<b>795</b>	<b>3,407</b>
<b>Other Commitments</b>		
Operating leases <sup>2</sup>	230	203
CRC Reef	3,624	4,610
Contracts <sup>3</sup>	6,093	3,358
Other <sup>4</sup>	2,771	2,481
<b>Total other commitments</b>	<b>12,718</b>	<b>10,652</b>
<b>Commitments receivable</b>	<b>(1,142)</b>	<b>(1,262)</b>
<b>Net commitments by Type</b>	<b>12,371</b>	<b>12,797</b>
<b>By Maturity</b>		
<b>Capital commitments</b>		
One year or less	795	3,077
From one to five years	-	330
<b>Total capital commitments</b>	<b>795</b>	<b>3,407</b>
<b>Operating lease commitments</b>		
One year or less	141	147
From one to five years	89	56
<b>Total operating lease commitments</b>	<b>230</b>	<b>203</b>
<b>CRC Reef commitments</b>		
One year or less	3,624	2,360
From one to five years	-	2,250
<b>Total CRC Reef commitments</b>	<b>3,624</b>	<b>4,610</b>
<b>Contract commitments</b>		
One year or less	1,909	778
From one to five years	4,184	2,580
<b>Total contract commitments</b>	<b>6,093</b>	<b>3,358</b>
<b>Other commitments</b>		
One year or less	1,759	1,758
From one to five years	1,012	723
<b>Total other commitments</b>	<b>2,771</b>	<b>2,481</b>
<b>Commitments receivable</b>	<b>(1,142)</b>	<b>(1,262)</b>
<b>Net Commitments by Maturity</b>	<b>12,371</b>	<b>12,797</b>

Commitments are GST inclusive where relevant

<sup>1</sup> Include outstanding purchase orders for plant and equipment.<sup>2</sup> Operating leases included are effectively non-cancellable and comprise:

Nature of lease : General description of leasing arrangement

Motor Vehicle : Leases are for a period of 24 months or 60,000 kilometres

No contingent rentals exist

<sup>3</sup> Contracts, include site maintenance, management of vessels and rent on offices in Perth and Darwin, rent period is for a further one year as at 30 June 2005.<sup>4</sup> As at 30 June 2005 other commitments comprise amounts payable under grants agreements in respect of which the recipient is yet to perform the services required.*The above schedule should be read in conjunction with the accompanying notes.*



## **NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS**

*for the year ended 30 June 2005*

Note	Description
1	Summary of Significant Accounting Policies
2	Adoption of Australian Equivalents to International Financial Reporting Standards from 2005-2006
3	Economic Dependency
4	Events Occurring After Reporting Date
5	Operating Revenue
6	Operating Expenses
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
18	Employee Equivalent
19	Reporting of Outcomes
20	Appropriation
21	Investments

## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2005

### NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

#### 1.1 Basis of Accounting

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

The statements have been prepared in accordance with:

- Finance Minister's Orders (being the *Commonwealth Authorities and Companies Orders (Financial Statements for reporting periods ending on or after 30 June 2005)*);
- Australian Accounting Standards and Accounting Interpretations issued by the Australian Accounting Standards Board; and
- Urgent Issues Group Abstracts.

The Institute's Statements of Financial Performance and Financial Position 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 the financial position.

Assets and liabilities are recognised in the Institute's Statement of Financial Position when and only when it is probable that future economic benefits will flow and the amounts of the assets or liabilities can be reliably measured. Assets and liabilities arising under agreements equally proportionately unperformed are however not recognised unless required by an Accounting Standard. Liabilities and assets that are unrecognised are reported in the Schedule of Commitments and the Schedule of Contingencies.

Revenues and expenses are recognised in the Institute's Statement of Financial Performance when and only when the flow or consumption or loss of economic benefits has occurred and can be reliably measured.

The Institute doesn't have any administered revenue and expenses.

#### 1.2 Changes in Accounting Policy

The accounting policies used in the preparation of these financial statements are consistent with those used in 2003 - 04.

#### 1.3 Revenue

The revenues described in this Note are revenues relating to the core operating activities of the Institute.

Revenue from contract research and development activities is recognised by reference to the stage of completion of contracts. The stage of completion is determined according to cost incurred to date after taking into account the total contract values and the proportion of costs incurred to date bear to the estimated total costs. The balances of contract research and development activities in progress are accounted as either contract research work in progress (Note 8a) or contract research revenue received in advance (Note 9C). Where required, a surplus or deficit is recognised progressively for each contract research and development activity.

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

Interest revenue is recognised on a time proportionate basis that takes into account the effective yield on the relevant assets.

Revenue from disposal of non-current assets is recognised when control of the asset has passed to the buyer.

## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

*for the year ended 30 June 2005*

### *Revenues from Government – Output Appropriations*

The full amount of the appropriation for departmental outputs for the year is recognised as revenue.

#### Resources Received Free of Charge

Services received free of charge are recognised as revenue when and only when a fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense.

Contributions of assets at no cost of acquisition or for nominal consideration are recognised at their fair value when the asset qualifies for recognition.

### **1.4 Transactions by the Government as Owner**

#### Equity Injections

Amounts appropriated by the Parliament as equity injections are recognised as 'contributed equity' in accordance with the Finance Ministers Orders. The Institute had no such equity injection during the year.

### **1.5 Employee Benefits**

#### Benefits

Liabilities for services rendered by employees are recognised at the reporting date to the extent that they have not been settled.

Liabilities for wages and salaries (including non-monetary benefits), annual leave and severance pay are measured at their nominal amounts. Other employee benefits expected to be settled within 12 months of their reporting date are also measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

All other employee benefit liabilities are measured as the present value of the estimated future cash outflows to be made in respect of services provided by employees up to the reporting date.

#### Leave

The liability for employee benefits includes provision 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 in future years by employees of the Institute is estimated to be less than the annual entitlement for sick leave.

The leave liabilities are calculated on the basis of employees' remuneration, including the Institute's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

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 2005. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

*for the year ended 30 June 2005*

### Superannuation

Employees are members of the Commonwealth Superannuation Scheme and the Public Sector Superannuation Scheme. The liability for their superannuation benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course.

The Institute makes employer contributions to the schemes at rates determined by an actuarial review and calculated to cover existing and emerging obligations. In addition a 3% Employer Productivity Superannuation Contribution is paid for CSS and PSS members. For term employees who are not members of the CSS or PSS a 9% employer productivity superannuation contribution is paid to the Australian Government Employees Superannuation Trust (AGEST) or other eligible superannuation funds.

### 1.6 Insurance

The Institute has insured for risks through the Commonwealth Government's insurable risk management fund called 'Comcover' and commercial insurers. Workers' compensation is insured through Comcare Australia.

### 1.7 Leases

A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risk and benefits incidental to ownership of leased non-current assets. In operating leases, the lessor effectively retains substantially all such risks and benefits.

The Institute only has operating leases. The operating lease payments are charged to the Statement of Financial Performance on a basis which is representative of the pattern of benefits derived from the leased assets.

### 1.8 Grants

Most grant agreements require the grantee to perform services, provide facilities or meet eligibility criteria. In these cases, the Institute recognises grant liabilities only to the extent that the services required have been performed or the eligibility criteria have been satisfied by the grantee.

In cases where grant agreements are made without conditions to be monitored, liabilities are recognised on signing the agreement.

### 1.9 Cash

Cash means notes and coins held and any deposits held at call with a bank or financial institution. Cash is recognised at its nominal amount. Interest is credited to revenue as it accrues.

### 1.10 Bad and doubtful debts

Bad debts are written off in the year they are identified. A provision is raised for doubtful debts based on review of all receivables outstanding for more than 90 days at year end and any other specific debt where the collection of the full amount is considered doubtful.

The Institute has made a loan to a start up company. Given the uncertainty of the development of the company the Institute has fully provided for the possibility of non payment of the loan.

## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2005

### 1.11 Other Financial Liabilities

Trade 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).

### 1.12 Acquisition of Assets

Assets are recorded at cost on acquisition. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken.

### 1.13 Property, Plant and Equipment

#### *Asset Recognition Threshold*

Purchases of property, plant and equipment are recognised initially at cost in the Statement of Financial Position, 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*

Property, plant and equipment are carried at valuation, being revalued annually with sufficient frequency such that the carrying amounts of each class of asset is not materially different, as at reporting date, from its fair value.

Fair values for each class of assets are determined as shown below.

Asset class	Fair value measured at:
Buildings	Market selling price
Leasehold improvements	Depreciated replacement cost
Plant and equipment	Market selling price

Assets that are surplus to requirements are measured at their net realisable value. At 30 June 2005 the Institute held no surplus assets (30 June 2004: \$Nil)

#### *Frequency*

Property, plant and equipment are subject to formal valuation every three years. In between formal valuations these assets are reviewed to ensure that they are maintained at fair 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 2005

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

	2005	2004
Buildings and improvements	<b>10 to 40 years</b>	10 to 40 years
Plant and equipment	<b>3 to 20 years</b>	3 to 20 years
Software	<b>3 to 12 years</b>	3 to 12 years

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

### 1.14 Impairment of Non-Current Assets

Non-current assets carried at up-to-date fair value at the reporting date are not subject to impairment testing.

Non-current assets carried at cost and held to generate net cash inflows have been tested for their recoverable amounts at the reporting date. The test compared the carrying amounts against the net present value of future net cash inflows. No write-down to recoverable amount was required (2004: nil).

The non-current assets carried at cost, which are not held to generate net cash inflows, have been assessed for indications of impairment. Where indications of impairment exist, the carrying amount of the asset is compared to its net selling price and depreciated replacement cost and is written down to its higher of the two amounts, if necessary. No write-down was required in 2004-05 (2004: nil).

Under AEIRFS the term 'impairment losses' replaces references to provision for doubtful debts. Impairment losses are recognised under AEIRFS only when there is objective evidence that a financial assets or group of assets is impaired.

### 1.15 Intangibles

Institute's intangibles comprise entirely of computer software purchased for internal use. Software purchases are recognised at cost in the Statement of Financial Position, except for purchases costing less than \$2,000 which are expensed in the year of acquisition.

Software developed internally is not capitalised and they are written off at the time such development expenses are incurred.

### 1.16 Inventories

Inventories held for resale are valued at the lower of cost and net realisable value.

Inventories not held for resale are valued at cost, unless they are no longer required, in which case they are valued at net realisable value.

Costs incurred in bringing each item of inventory to its present location and condition is assigned on a first-in-first out basis.

### 1.17 Taxation

The Institute is exempt from all forms of taxation except fringe benefits tax and the goods and services tax (GST). Revenues, expenses and assets are recognised net of GST:

- except where the amount of GST incurred is not recoverable from the Australian Taxation Office; and
- except for receivables and payables.

## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

*for the year ended 30 June 2005*

### 1.18 Foreign Currency

Transactions denominated in a foreign currency are converted at the exchange rate at the date of the transaction. Foreign currency receivables and payables are translated at the exchange rates current as at balance date. Associated currency gains and losses are not material.

### 1.19 Investments

The Institute has interests in three organisations

- Cleveland Biosensors Pty Ltd
- AIMS @ JCU Joint Venture
- Arafura Timor Research Facility

#### Cleveland Biosensors Pty Ltd

The Institute retains an investment of 7.9% in a spin off company Cleveland Biosensors Pty Ltd (CBPL). The company was formerly known as ToxiTech Pty Ltd. The investment is 100 shares at a total value of \$100. This is not a controlling ownership and so does not require consolidation of Cleveland Biosensors Pty Ltd in the Institute's accounts.

#### AIMS @ JCU Joint Venture

The Institute has entered into a joint venture operations with James Cook University to -

- increase research activities by the participants in determined programs; and
- to improve participant's individual research capabilities and research outputs and outcomes of all participants.

The joint venture operations have a board which determines the research objective for funding. The agreement specifies that the share that each participant is to receive from the joint venture is to be determined by the board.

The Institute received from the joint venture operations \$743,956 to cover the installation of an optical fibre capital between AIMS and JCU to improve communications between the two organisations, and various operating expenditure on behalf of the joint venture. The Institute is responsible for managing the funds on behalf of the venture. At 30 June 2005 the Institute held \$2,890,096 on behalf of the joint venture operations. This is shown as a liability in AIMS financial statements.

#### The Arafura Timor Research Facility Joint Venture

The Australian Institute of Marine Science has entered into a joint venture operations with the Australian National University. The Institute has a 50% share. The purpose of the venture is to maintain a research facility in Darwin that will create a centre of excellence in the field of physical, chemical engineering, information or biological sciences with the capability of pursuing world class research and training in that field.

The construction of the laboratory and office facility was completed during the year with the facility commenced to be used towards the end of the financial year.

The Australian National University is responsible for managing the financial affairs of the joint venture.

The Institute's 50% share in the venture has resulted in the institute's equity increasing by \$1,748,960.



## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

*for the year ended 30 June 2005*

### 1.20 Comparative Figures

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

### 1.21 Research, Development and Intellectual Property

Costs associated with research and development, intellectual property, patents and trade marks are expensed as incurred unless it can be established that they are recoverable beyond reasonable doubt.

### 1.22 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 arrangements 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.

### 1.23 Consultancies and Grants

Various consultancies and grants have been made to the Institute for specific research projects, seminar, workshops and employment assistance. Monies are paid either in advance or arrears and the difference at 30 June is reflected as either creditors or receivables respectively.

### 1.24 Rounding

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

- remuneration of directors (members of council);
- remuneration of officers; and
- remuneration of auditors.



## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2005

### NOTE 2. ADOPTION OF AUSTRALIAN EQUIVALENTS TO INTERNATIONAL FINANCIAL REPORTING STANDARDS FROM 2005-2006.

The Australian Accounting Standards Board has issued replacement Australian Accounting Standards to apply from 2005-06. The new standards are the Australian Equivalents to International Financial Reporting Standards (AEIFRS). The International Financial Reporting Standards are issued by the International Accounting Standards Board. The new standards cannot be adopted early. The standards being replaced are to be withdrawn with effect from 2005-06, but continue to apply in the meantime, including reporting periods ending on 30 June 2005.

The purpose of issuing AEIFRS is to enable Australian reporting entities reporting under the *Corporations Act 2001* to be able to more readily access overseas capital markets by preparing their financial reports according to accounting standards more widely used overseas.

AEIFRS contain certain additional provisions that will apply to not-for-profit entities, including not-for-profit Australian Government Authorities. Some of these provisions are in conflict with IFRSs; therefore the Institute will only be able to assert that the financial report has been prepared in accordance with Australian Accounting Standards.

AAS 29 *Financial Reporting by Government Departments* will continue to apply under AEIFRS.

Accounting Standard AASB 1047 *Disclosing the Impacts of Adopting Australian Equivalents to International Financial Reporting Standards* requires that the financial report for 2004-05 disclose:

- an explanation of how the transition to AEIFRS is being managed;
- narrative explanations of the key policy differences arising from the adoption of AEIFRS;
- any known or reliably estimable information about the impacts on the financial report had it been prepared using the Australian equivalents to IFRS; and
- if the impacts of the above are not known or reliably estimable, a statement to that effect.

Where an entity is not able to make a reliable estimate, or where quantitative information is not known, the entity should update the narrative disclosures of the key differences in accounting policies that are expected to arise from the adoption of AEIFRS.

The purpose of this Note is to make these disclosures.

Management of the transition to AEIFRS

The Institute has taken the following steps for the preparation towards the implementation of AEIFRS:

- The Institute's Audit and Finance Committee is tasked with oversight of the transition to and implementation of AEIFRS. The Chief Finance Officer is formally responsible for the project and reports to the Audit and Finance Committee on progress against the formal plan approved by the Committee. The plan requires the following key steps to be undertaken:
  - All major accounting policy differences between current AASB standards and AEIFRS were identified by 30 June 2004,
  - Adjustments that are required to make an AEIFRS balance sheet compliant has been identified during the preparation of the 2004-05 statutory financial report,
  - The 2004-05 Balance Sheet under AEIFRS will be reported to the Department of Finance and Administration in line with their reporting deadlines, and
  - Addresses the risk to successful achievement of the above objectives and includes strategies to keep implementation on track to meet deadlines.

## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2005

### Major changes in accounting policy

The Institute believes that the first financial report prepared under AEIFRS i.e. at 30 June 2006, will be prepared on the basis that the Institute will be a first time adopter under AASB 1 *First-time Adoption of Australian Equivalents to International Financial Reporting Standards*. Changes in accounting policies under AEIFRS are applied retrospectively i.e. as if the new policy had always applied except in relation to the exemptions available and prohibitions under AASB 1. This means that an AEIFRS compliant balance sheet has to be prepared as at 1 July 2004. This will enable the 2005-06 financial statements to report comparatives under AEIFRS.

Changes to major accounting policies are discussed in the following paragraphs.

Management's review of the quantitative impacts of AEIFRS represents the best estimate of the impacts of the changes as at reporting date. The actual effects of the impacts of AEIFRS may differ from these estimates due to:

- continuing review of the impacts of AEIFRS on the Institute's operations;
- potential amendments to the AEIFRS and AEIFRS Interpretations; and
- emerging interpretation as to the accepted practice in the application of AEIFRS and the AEIFRS Interpretations.

Changes to major accounting policies are discussed in the following paragraphs.

- **Property, plant and equipment**

It is expected that the 2005-06 Finance Minister's Orders will continue to require property plant and equipment assets to be valued at fair value in 2005-06.

The Institute formally valued its property, plant and equipment at fair value in 2002. The Institute proposes to formally revalue all its assets in December 2005. In between the formal valuations the Institute reviews the property, plant and equipment to ensure that they are at fair value at the reporting date. There will be no adjustment required by the Institute to comply with AEIFRS standards.

- **Intangible Assets**

The AEIFRS standard on Intangible assets does not permit intangibles to be measured at valuation unless there is an active market for the intangibles.

The Institute's policy is to write off any expenses associated with the internal development of computer software at the time the expense is incurred. The Institute only classifies computer software as intangibles that have been purchased in an active market. The implementation of the new standards will have nil impact on the balance sheet.

- **Impairment of non-current assets**

Under the new equivalent standards, these assets will be subject to an assessment for impairment and, if there are indications of impairment, measurement of any impairment. The impairment test is that the carrying amount of an asset must not exceed the greater of (a) its fair value less cost to sell and (b) its value in use. 'Value in use' is the net present value of net cash inflows for non-current assets of the Institute and depreciated replacement cost for other assets which would be replaced if the Institute was deprived of them.

The Institute's policy on impairment of non-current assets is in Note 1.14. For 2004-05 there is no requirement for adjustments for this standard.

## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2005

### Employee Benefits

The provision for long service leave is measured at the present value of estimated future cash outflows using market yields as at the reporting date on national government bonds. Therefore no adjustment is required.

However, the provision for annual leave is not measured using national government bonds. An assessment has been made and there will be a requirement for adjustment to provision account and this will have an impact on the operating surplus for the year. The adjustment will be to annual leave of \$81,000. The following adjustments will be required.

	30 June 2005 Opening balance sheet and in year adjustments \$	30 June 2004 Opening balance sheet adjustments \$
<b>Reconciliation of AIMS Contributed Equity</b>		
Total Equity under AAS – 30 June 2004	-	3,803
Total Equity under AEIFRS -1 July 2004	3,722	-
Adjustment under AEIFRS	-	(81)
Adjustment to accumulated results	1,857	-
Total Equity under AEIFRS	5,579	3,722
<b>Reconciliation of AIMS Accumulated Results</b>		
Total Surplus under AAS – 30 June 2004	-	1,028
Total Surplus under AAS 30 June 2005	1,856	-
Adjustments	1	(81)
Total Profit under AEIFRS	1,857	947
<b>Reconciliation of AIMS Reserves</b>		
Total Reserves under AAS – 30 June 2004	-	17,677
Total Reserves under AEIFRS – 1 July 2004	17,677	-
Adjustments	-	-
Total Reserves under AEIFRS	17,677	17,677

### Financial instruments

The Institute has reviewed each financial asset in line with impairment provisions of AASB 139 and has determined that no adjustment to carrying amount is required.

## NOTE 3. ECONOMIC DEPENDENCY

The Australian Institute of Marine Science was established by an Act of Parliament, *The Australian Institute of Marine Science Act 1972* and is controlled by the Commonwealth of Australia.

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

## NOTE 4. CONTINGENCIES

The Institute is not aware of any material contingencies that may have an impact on the Institute.

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**
*for the year ended 30 June 2005*

	2005 <u>\$'000</u>	2004 <u>\$'000</u>
<b>Note 5. OPERATING REVENUE</b>		
<b>5A Revenues from Government</b>		
Appropriation for output	<u>22,483</u>	<u>22,134</u>
<b>Total revenues from government</b>	<u>22,483</u>	<u>22,134</u>
<b>5B Revenues from Sales of Goods and Services</b>		
Goods	89	118
Services	<u>5,600</u>	<u>5,250</u>
<b>Total Revenues from Sales of Goods and Services</b>	<u>5,689</u>	<u>5,368</u>
Provision of goods to:		
Related entities	-	-
External entities	<u>89</u>	<u>118</u>
<b>Total sales of goods</b>	<u>89</u>	<u>118</u>
Rendering of services to:		
Related entities	624	572
External entities	<u>4,976</u>	<u>4,678</u>
<b>Total rendering of services</b>	<u>5,600</u>	<u>5,250</u>
Cost of sales of goods	<u>61</u>	<u>104</u>
<b>5C Revenues from Interest</b>		
Term deposits	<u>985</u>	<u>790</u>
<b>5D Revenues from Sales of Assets</b>		
Plant and equipment:		
Proceeds from disposal	464	501
Net book value of assets disposed	<u>(385)</u>	<u>(570)</u>
Net gain / (loss) from disposal of plant and equipment	<u>79</u>	<u>(69)</u>
Write-offs	<u>(29)</u>	<u>(105)</u>
<b>Net gain (loss) on disposal of plant and equipment</b>	<u>50</u>	<u>(174)</u>
Total proceeds from disposals	464	501
Total value of assets disposed	<u>(414)</u>	<u>(675)</u>
<b>Total net gain (loss) from disposal of assets</b>	<u>50</u>	<u>(174)</u>

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**
*for the year ended 30 June 2005*

	<b>2005</b>	2004
	<b>\$'000</b>	\$'000
<b>Note 5. OPERATING REVENUE (CONTINUED)</b>		
<b>5E Revenue from Sales of Investments</b>		
Proceeds from disposal	-	456
Net book value of investment disposed	-	(400)
Net gain from disposal of investment	-	56
 Total proceeds from disposal	 -	 456
Total value of investments disposed	-	(400)
<b>Total revenue from disposal of investments</b>	<b>-</b>	<b>56</b>
<b>5F Revenue from related entities/Joint Ventures</b>		
Infrastructure	-	2,100
Joint Ventures	<b>2,696</b>	42
<b>Total revenue from related entities &amp; joint ventures</b>	<b>2,696</b>	2,142
<b>5G Other Revenue</b>		
Insurance claims	<b>70</b>	59
Other	<b>39</b>	48
<b>Total other revenue</b>	<b>109</b>	107

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

	<b>2005</b>	2004
	<b>\$'000</b>	\$'000
<b>NOTE 6. OPERATING EXPENSES</b>		
<b>6A Employee Expenses</b>		
Wages and salaries	<b>10,416</b>	9,709
Superannuation	<b>1,590</b>	1,582
Annual recreation leave	<b>1,229</b>	1,272
Long service leave	<b>150</b>	340
Fringe benefits tax	<b>212</b>	239
<b>Total employee benefits expenses</b>	<b>13,597</b>	13,142
Workers compensation insurance	<b>66</b>	90
<b>Total employee expenses</b>	<b>13,663</b>	13,232



**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**
*for the year ended 30 June 2005*

	2005 \$'000	2004 \$'000
<b>NOTE 6. OPERATING EXPENSES (CONTINUED)</b>		
<b>6B Supplier Expenses</b>		
Operating lease rentals	198	245
Supply of goods and services		
Appointment expenses	113	184
Auditing	43	44
Equipment and software purchases	303	280
Catering Subsidy	69	78
Chemical & Laboratory Supplies	319	219
Cleaning and Ground Maintenance	242	212
Communications telephone, postage	475	473
Compensation	177	-
Consultancies	21	58
Contracting & servicing	1,648	1,379
Consumables	771	556
Electricity	521	512
Field Costs	57	35
Freight	197	197
Fuel, Oil, Gas	466	409
Hire of Equipment	187	341
Insurances	288	331
Legal	81	109
Licences & Fees	192	186
Patents and trademarks	105	97
Publications journals, subscriptions	453	304
Rent	50	48
Repairs & maintenance	1,104	1,189
Security	166	157
Stationery	108	79
Training seminars and conferences	122	127
Travel & Accommodation	1,059	1,141
Vessels management and staffing	1,649	1,589
Victuals	54	67
Water	89	80
	<u>11,327</u>	<u>10,726</u>
Goods from related entities	8	-
Goods from external entities	2,556	2,106
Services from related entities	985	611
Services from external parties	7,580	7,764
Operating lease rentals	<u>198</u>	<u>245</u>
<b>Total supplier expenses</b>	<u>11,327</u>	<u>10,726</u>

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

	<b>2005</b>	2004
	<b>\$'000</b>	\$'000
<b>NOTE 6. OPERATING EXPENSES (CONTINUED)</b>		
<b>6C Depreciation</b>		
Depreciation property, plant and equipment	<b>4,997</b>	4,501
The aggregate amounts of depreciation expensed during the reporting period for each class of depreciable asset are as follows:		
Building and improvements	<b>1,365</b>	1,350
Plant and equipment	<b>1,814</b>	1,432
Computer equipment	<b>833</b>	903
Vehicles	<b>244</b>	193
Office equipment	<b>49</b>	49
Ships, launches and vessels	<b>387</b>	316
Library	<b>226</b>	226
Intangibles (computer software)	<b>79</b>	32
<b>Total depreciation</b>	<b>4,997</b>	4,501
<hr/>		
<b>6D Grants</b>		
Non-profit institutions	<b>29</b>	187
<hr/>		
<b>6E Write-Down of Assets</b>		
Bad and doubtful debts expense	<b>140</b>	749
<b>Total write-down assets</b>	<b>140</b>	749
<hr/>		

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

	2005 \$'000	2004 \$'000
<b>NOTE 7. FINANCIAL ASSETS</b>		
<b>7A Cash</b>		
Cash on hand	5	5
Cash at bank	184	93
<b>Total cash</b>	189	98
<b>7B Investments</b>		
Term deposits	13,340	13,051
Term deposits on behalf of AIMS@JCU	2,906	3,858
<b>Total investments</b>	16,246	16,909
Investments are categorised as follows:		
Current	14,296	14,959
Non-current	1,950	1,950
<b>Total investments</b>	16,246	16,909
<b>7C Receivables</b>		
Goods and services	1,003	1,257
Less : Provision for doubtful debts	(161)	(20)
	842	1,237
Loan	729	729
Less : Provision for doubtful debts	(729)	(729)
	-	-
Interest receivable	178	319
GST receivable	-	7
Other receivables	282	609
<b>Total receivables (net)</b>	1,302	2,172
Receivables (gross) are aged as follows :		
Not Overdue	1,287	2,006
Overdue by:		
Less than 30 days	-	156
30 to 60 days	-	2
60 to 90 days	145	-
More than 90 days	760	757
	905	915
<b>Total receivables (gross)</b>	2,192	2,921
The provision for doubtful debts is aged as follows:		
Not Overdue	-	-
Overdue by:		
Less than 30 days	-	-
30 to 60 days	-	-
60 to 90 days	-	-
More than 90 days	(890)	(749)
<b>Total provision for doubtful debts</b>	(890)	(749)
Receivables are categorised as follows:		
Current	1,302	2,172
<b>Total receivables</b>	1,302	2,172

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

	2005 \$'000	2004 \$'000
<b>NOTE 8. NON-FINANCIAL ASSETS</b>		
<b>8A Buildings and improvements</b>		
Buildings and improvements at fair value	33,043	30,940
Accumulated depreciation	<u>(3,354)</u>	<u>(2,007)</u>
	<u>29,689</u>	<u>28,933</u>
Capital work in progress at cost	<u>28</u>	<u>218</u>
<b>Total buildings and improvements</b>	<b>29,717</b>	<b>29,151</b>
<b>8B Plant and equipment and other</b>		
<b>Plant and equipment</b>		
Plant and equipment at fair value	13,860	8,531
Accumulated depreciation	<u>(3,854)</u>	<u>(2,067)</u>
	<u>10,006</u>	<u>6,464</u>
Work in progress-at cost	<u>39</u>	<u>1,342</u>
<b>Total plant and equipment</b>	<b>10,045</b>	<b>7,806</b>
<b>Computer equipment</b>		
Computer equipment at fair value	3,002	2,557
Accumulated depreciation	<u>(2,057)</u>	<u>(1,264)</u>
	<u>945</u>	<u>1,293</u>
<b>Total computer equipment</b>	<b>945</b>	<b>1,293</b>
<b>Vehicles</b>		
Vehicles at fair value	1,374	1,073
Accumulated depreciation	<u>(279)</u>	<u>(156)</u>
	<u>1,095</u>	<u>917</u>
<b>Total vehicles</b>	<b>1,095</b>	<b>917</b>
<b>Office equipment</b>		
Office equipment at fair value	248	230
Accumulated depreciation	<u>(116)</u>	<u>(67)</u>
	<u>132</u>	<u>162</u>
<b>Total office equipment</b>	<b>132</b>	<b>162</b>

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

	2005 \$'000	2004 \$'000
<b>NOTE 8. NON-FINANCIAL ASSETS (CONTINUED)</b>		
<b>8B Plant and equipment and other (continued)</b>		
<b>Ships, launches and vessels</b>		
Ships, launches and vessels at fair value	4,257	4,312
Accumulated depreciation	<u>(803)</u>	<u>(444)</u>
	<u>3,454</u>	<u>3,867</u>
Work in progress at cost	<u>128</u>	<u>-</u>
<b>Total ships, launches and vessels</b>	<b>3,581</b>	<b>3,867</b>
<b>Library books</b>		
Library books at fair value	2,696	2,694
Accumulated depreciation	<u>(564)</u>	<u>(338)</u>
	<u>2,132</u>	<u>2,356</u>
<b>Total library books</b>	<b>2,132</b>	<b>2,356</b>
<b>Total plant and equipment and other</b>	<b>17,930</b>	<b>16,402</b>
<b>8C Intangibles</b>		
Computer software at cost		
Externally purchased	347	142
Accumulated amortisation	<u>(128)</u>	<u>(55)</u>
<b>Total intangibles</b>	<u>219</u>	<u>87</u>
<b>8D Inventories</b>		
Inventories held for sale	40	49
Stores inventories not held for sale (cost)	<u>180</u>	<u>190</u>
<b>Total inventories</b>	<u>220</u>	<u>239</u>
All inventories are current assets		
<b>8E Other Non-Financial Assets</b>		
Workshop jobs in progress	444	258
Prepayments	<u>366</u>	<u>287</u>
<b>Total other non-financial assets</b>	<u>810</u>	<u>545</u>
All other non-financial assets are current assets		

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

**Note 8F Analysis of Property, Plant and Equipment and Intangibles**

**TABLE A - Reconciliation of the opening and closing balances of property, plant and equipment and intangibles**

Item	Buildings	Plant & Equipment	Computers	Vehicles	Office Equipment	Ships & Vessels	Library	Computer Software	TOTAL
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
<b>As at 1 July 2004</b>									
Gross book value	31,158	9,873	2,557	1,073	229	4,312	2,694	142	52,038
Accumulated depreciation/amortisation	(2,006)	(2,067)	(1,264)	(156)	(67)	(444)	(338)	(55)	(6,398)
<b>Opening net book value</b>	29,151	7,806	1,293	917	162	3,867	2,357	87	45,639
Additions									
By purchase	1,955	4,090	489	659	20	217	2	211	7,642
Depreciation/amortisation expense	(1,365)	(1,814)	(833)	(244)	(49)	(387)	(226)	(79)	(4,997)
Disposals									
Other disposals	(24)	(35)	(4)	(237)	(0)	(116)		(0)	(414)
<b>As at 30 June 2005</b>									
Gross book value	33,071	13,900	3,002	1,373	248	4,384	2,696	347	59,021
Accumulated depreciation/amortisation	(3,354)	(3,854)	(2,057)	(279)	(116)	(803)	(564)	(128)	(11,155)
<b>Closing net book value</b>	29,717	10,045	945	1,095	132	3,581	2,132	219	47,866

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

**Note 8F Analysis of Property, Plant and Equipment and Intangibles**

**TABLE B - Assets at valuation**

Item	Buildings \$'000	Plant & Equipment \$'000	Computers \$'000	Vehicles \$'000	Office Equipment \$'000	Ships & Vessels \$'000	Library \$'000	TOTAL \$'000
<b>As at 30 June 2005</b>								
Gross value	33,043	13,860	3,002	1,374	248	4,257	2,696	58,481
Accumulated depreciation/amortisation	(3,354)	(3,854)	(2,057)	(279)	(116)	(803)	(564)	(11,028)
<b>Opening net book value</b>	<b>29,689</b>	<b>10,006</b>	<b>945</b>	<b>1,095</b>	<b>132</b>	<b>3,454</b>	<b>2,132</b>	<b>47,453</b>
<b>As at 30 June 2004</b>								
Gross value	30,339	6,588	1,886	219	177	4,139	2,694	46,043
Accumulated depreciation/amortisation	(1,975)	(1,836)	(1,123)	(63)	(53)	(428)	(338)	(5,816)
<b>Closing net book value</b>	<b>28,364</b>	<b>4,752</b>	<b>763</b>	<b>156</b>	<b>125</b>	<b>3,711</b>	<b>2,357</b>	<b>40,227</b>



**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**
*for the year ended 30 June 2005*

	2005 \$'000	2004 \$'000
<b>NOTE 9. PROVISIONS AND PAYABLES</b>		
<b>9A Employee Provisions</b>		
Salaries and wages	55	-
Annual leave	2,739	2,554
Long service leave	3,273	3,215
Fringe benefit tax	51	59
<b>Aggregate employee entitlement liability</b>	<b>6,118</b>	<b>5,828</b>
Workers' compensation	-	1
<b>Aggregate employee benefit liability and related on costs</b>	<b>6,118</b>	<b>5,829</b>
Current	1,315	1,263
Non-Current	4,803	4,566
	<b>6,118</b>	<b>5,829</b>
<hr/>		
<b>9B Supplier Payables</b>		
Trade creditors	1,316	1,795
<b>Total supplier payables</b>	<b>1,316</b>	<b>1,795</b>
<hr/>		
All suppliers are current		
<hr/>		
<b>9C Consultancies and Grants</b>		
Non-profit institutions	1,343	959
Profit institutions	5	74
Joint venture	2,907	3,858
<b>Total consultancies and grants</b>	<b>4,255</b>	<b>4,891</b>
Current	2,640	4891
Non-Current	1,615	-
	<b>4,255</b>	<b>4891</b>

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*  
**NOTE 10. EQUITY**

**10A Analysis of Equity**

Item	Accumulated Results		Asset revaluation reserve		Total Contributed Equity		TOTAL EQUITY	
	2005 \$'000	2004 \$'000	2005 \$'000	2004 \$'000	2005 \$'000	2004 \$'000	2005 \$'000	2004 \$'000
Opening balance as at 1 July	3,803	2,775	17,677	17,677	31,606	31,607	53,086	52,059
Net profit	1,856	1,028	-	-	-	-	1,856	1,028
Closing balance as at 30 June	5,660	3,803	17,677	17,677	31,607	31,607	54,944	53,087
Total equity attributable to the Commonwealth	5,660	3,803	17,677	17,677	31,607	31,607	54,944	53,087

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**
*for the year ended 30 June 2005*

	Notes	2005 \$'000	2004 \$'000
<b>NOTE 11. CASH FLOW RECONCILIATION</b>			
<b>11A Reconciliation of Operating Surplus to Net Cash from Operating Activities:</b>			
<b>Reconciliation of operating surplus to net cash provided by operating activities</b>			
Operating surplus		1,856	1,028
<b>Non-Cash Items</b>			
Depreciation and amortisation	6C	4,997	4,501
(Gain)/Loss on disposal of assets	5D	(50)	118
Change in provisions		131	-
<b>Changes in Assets and Liabilities</b>			
(Increase)/Decrease in receivables	7C	730	(294)
(Increase)/Decrease in inventory	8D	20	11
(Increase)/Decrease in other assets	8E	(254)	(29)
Increase/(Decrease) in investments	5E	-	(400)
Increase/(Decrease) in employees provisions	9A	289	103
Increase/(Decrease) in supplier payables	9B	(478)	644
Increase/(Decrease) in other payables	9C	(636)	3,576
Other		-	2
<b>Net cash from operating activities</b>		<b>6,605</b>	<b>9,260</b>
<b>11B Reconciliation of Cash</b>			
Cash balance comprises:			
Cash		189	98
Investments		16,246	16,909
<b>Total cash</b>		<b>16,435</b>	<b>17,007</b>

**NOTE 12. EXTERNAL FINANCING ARRANGEMENTS**

The Institute has finance facilities with the Commonwealth Bank of Australia as follows:

Total facilities	1,000	1,000
Amount of facility used as at 30 June	-	-
Facility available	<u>1,000</u>	<u>1,000</u>

The facilities do not appear on the Statement of Financial Performance.

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

	<b>Number</b>	
	<b>2005</b>	<b>2004</b>
<b>NOTE 13. DIRECTORS REMUNERATION (MEMBERS OF COUNCIL)</b>		
The number of directors of the Institute included in these figures are shown below in the relevant remuneration bands.		
\$ NIL - \$9,999	<b>4</b>	-
\$10,000 - \$19,999	<b>2</b>	3
\$20,000 - \$29,999	<b>1</b>	1
\$30,000 - \$39,999	-	1
\$80,000 - \$89,999	-	1
\$170,000 - \$179,999	-	1
\$230,000 - \$239,999	<b>1</b>	-
	<b>8</b>	<b>7</b>
	<b>\$</b>	<b>\$</b>
<b>Total remuneration received or due and receivable by Directors of the Institute</b>	<b>326,283</b>	<b>367,169</b>

The Directors (members of council) of the Australian Institute of Marine Science are appointed by the Governor General. The Chief Executive Officer is appointed by the Governor General on the recommendation of the Board of Directors (members of council).

**NOTE 14. RELATED PARTY DISCLOSURES**

**Directors of the Institute**

The Directors (members of council) of the Institute during the year were:

Dr I Gould (Chairman)

Mr A E de N Rogers A.O. (Chairman, Resigned December 31 2004)

Dr M Sleigh

Mr J Grace (Appointed December 16 2004)

Ms E Montano (Appointed December 16 2004)

Professor Peter Høj (Appointed January 1 2005)

D I Poiner (Chief Executive Officer, Appointed July 12 2004)

Mr P Willers (Acting Chief Executive Officer, until July 11 2004)

The aggregate remuneration of Directors is disclosed in Note 13.

**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.

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

	<b>Number</b>	
	<b>2005</b>	<b>2004</b>
<b>NOTE 15. REMUNERATION OF OFFICERS</b>		
The number of officers who received or were due to receive total remuneration of \$100,000 or more:		
\$120,000 - \$129,999	3	3
\$130,000 - \$139,999	-	2
\$140,000 - \$149,999	1	-
\$170,000 - \$179,999	1	-
	<u>5</u>	<u>5</u>
	<u>\$</u>	<u>\$</u>
The aggregate amount of total remuneration of officers shown above.	<u>700,448</u>	<u>749,048</u>

The officer remuneration includes all officers, except the Chief Executive Officer, concerned with or taking part in the management of the Institute during 2004-05 who received or were due to receive total remuneration of \$100,000 or more. Details in relation to the Chief Executive Officer have been incorporated into Note 13 - Remuneration of Directors.

	<b>2005</b>	<b>2004</b>
	<b>\$</b>	<b>\$</b>

**NOTE 16. REMUNERATION OF AUDITORS**

Remuneration to the Auditor-General for auditing the financial statements for the reporting period.

The fair value of services provided was:	<u>42,500</u>	<u>44,000</u>
--	---------------	---------------

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

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
for the year ended 30 June 2005

**NOTE 17. FINANCIAL INSTRUMENTS**

**Table A. Terms, Conditions and Accounting Policies**

<b>Financial Instrument</b>	<b>Notes</b>	<b>Accounting Policies and Methods</b> (including recognition criteria and measurement basis)	<b>Nature of Underlying Instrument</b> (including significant terms and conditions affecting the amount, timing and certainty of cash flows).
<i>Financial Assets</i>			
	7	Financial assets are recognised when control over future economic benefits is established and the amount of the benefit can be reliably measured.	
Deposits at call (cash)	7A	Deposits are recognised at their nominal value. Interest is credited as it accrues.	Temporarily surplus funds, mainly from monthly drawdowns of appropriation, are placed on deposit at call with the Institute's banker. Interest is earned on the daily balance at the prevailing daily rate for money on call and is paid at month end.
Receivables for goods and services	7C	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 30 days (2002-03 30 days).
Term deposit	7B	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 fourteen months from June 30 2005. The term deposits earned an average annual interest rate of 5.37% (2004: 5.18%).
Shares in listed companies	7B	Shares are recognised at the net market value as at the reporting date.	Shares were deemed to the Institute in the year ended 30 June 2003. The Institute disposed of the shares in the financial year ended 30 June 2004.
Interest	7C	Interest is recognised as it is earned.	The Institute invests surplus funds on short and long term deposits. Interest is payable on maturity. Interest which has been earned but not yet received is accrued for in the annual accounts.
Other receivables	7C	The Institute enters into contracts for the supply of services, the receivable is recognised where expenses have been incurred and payment has not been invoiced.	Payment arrangements for contracts generally involve payment for achieving specified milestones. Expenses can be incurred in achieving the milestones, before an invoice is raised to the client.
Long term loan	7C	The loan is recognised at cost.	The Institute has a loan to a start up company (refer Note 1.19). The cost has been fully provided for in doubtful debts as there is some doubt as to the collectability of the loan.
<i>Financial Liabilities</i>			
Trade creditors	9B	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.
Grants payable	9C	This payable is recognised as the value of the work outstanding on grants where money is received in advance.	Grants range in maturity from a few weeks to three years. Amounts recognised as the work is undertaken by the Institute in accordance with the contract.

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

**Note 17. FINANCIAL INSTRUMENTS (CONTINUED)**

**Table B Interest Rate Risk**

Financial Instrument	Notes	Floating Interest		Fixed Interest Rate Maturing In				Non - Interest Bearing		Total		Weighted Average Effective Interest Rate	
		Rate		1 Year or less		1 to 5 Years		Bearing				2005	
		2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	%	%
		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000		
<b>Financial Assets (Recognised)</b>													
Cash at bank	7A	184	93	-	-	-	-	-	-	184	93	3.25	2.75
Cash on hand	7A	-	-	-	-	-	-	5	5	5	5	n/a	n/a
Receivables for goods and services and accrued income	7C	-	-	-	-	-	-	1,003	1,257	1,003	1,257	n/a	n/a
Term deposit	7B	-	-	14,296	14,959	1,950	1,950	-	-	16,246	16,909	5.37	5.18
Accrued interest	7C	-	-	-	-	-	-	178	319	178	319	n/a	n/a
Other receivables	7C	-	-	-	-	-	-	282	609	282	609	n/a	n/a
Long term loan	7C	-	-	-	-	729	729	-	-	729	729	5.10	5.01
<b>Total Financial Assets (Recognised)</b>		<b>184</b>	<b>93</b>	<b>14,296</b>	<b>14,959</b>	<b>2,679</b>	<b>2,679</b>	<b>1,468</b>	<b>2,190</b>	<b>18,629</b>	<b>19,921</b>		
<b>Total Assets</b>										<b>66,633</b>	<b>65,603</b>		
<b>Financial Liabilities (Recognised)</b>													
Trade creditors	9B	-	-	-	-	-	-	1,316	1,795	1,316	1,795	n/a	n/a
Consultancies and grants	9C	-	-	-	-	-	-	4,255	4,891	4,255	4,891	n/a	n/a
<b>Total Financial Liabilities (Recognised)</b>								<b>5,571</b>	<b>6,686</b>	<b>5,571</b>	<b>6,686</b>		
<b>Total Liabilities</b>										<b>11,689</b>	<b>12,515</b>		

# NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2005

## NOTE 17. FINANCIAL INSTRUMENTS (CONTINUED)

TABLE C Net Fair Values of Financial Assets and Liabilities

		2005		2004	
		Total Carrying Amount	Aggregate Net Fair Value	Total Carrying Amount	Aggregate Net Fair Value
	Note	\$'000	\$'000	\$'000	\$'000
Financial Assets					
Cash at bank	7A	184	184	93	93
Cash on hand	7A	5	5	5	5
Receivables for goods and services	7C	842	842	1,237	1,237
Term deposits	7B	16,246	16,246	16,909	16,909
Accrued interest	7C	178	178	319	319
Other receivables	7C	282	282	609	609
Total Financial Assets		17,738	17,738	19,172	19,172
Financial Liabilities (Recognised)					
Trade creditors	9B	1,316	1,316	1,795	1,795
Consultancies and grants	9C	4,255	4,255	4,891	4,891
Total Financial Liabilities		5,571	5,571	6,686	6,686

### Financial Assets

The net fair values of cash, deposits on call and non-interest bearing monetary financial assets approximate their carrying amounts.

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 and consultancies and grants, which are short term in nature, approximate their carrying amounts.

### Credit Risk Exposure

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

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.



**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**

*for the year ended 30 June 2005*

	Number	
	2005	2004
<b>NOTE 18. EMPLOYEE EQUIVALENTS</b>		
The number of full-time equivalents employed for the year	156	158

## NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS

for the year ended 30 June 2005

### NOTE 19. REPORTING OF OUTCOMES

#### 19A Outcome of the Institute

The Institute is structured to meet one outcome -

"Enhanced scientific knowledge supporting the protection and sustainable development of Australia's marine resources".

Only one Output is identified for the one Outcome.

#### 19B Net Cost of Outcome Delivery

	2005	2004
	\$'000	\$'000
Operating expenses	30,570	30,470
<b>Total expenses</b>	<b>30,570</b>	<b>30,470</b>
Cost recovered from provision of goods and services to the non-government sector		
Goods and services	5,689	5,368
<b>Total cost recovered</b>	<b>5,689</b>	<b>5,368</b>
Other external revenues		
Interest	985	790
Revenue from sale of assets	464	501
Revenue from sale of investments	-	456
Revenue from related entities	2,696	2,142
Other	109	107
Total other external revenues	4,255	3,996
<b>Net cost/(contribution) of outcome</b>	<b>20,626</b>	<b>21,106</b>

#### 19C Institute Revenues and Expenses by Output

<b>Operating expenses</b>		
Employees	13,663	13,232
Suppliers	11,327	10,430
Depreciation	4,997	4,501
Grants	29	483
Value of assets sold	414	675
Value of investments sold	-	400
Write-down of assets	140	749
<b>Total operating expenses</b>	<b>30,571</b>	<b>30,470</b>
<b>Funded by:</b>		
Revenues from Government	22,483	22,134
Goods and services	5,689	5,368
Interest	985	790
Sale of assets	464	501
Sale of investments	-	456
Revenue from related entities	2,696	2,142
Other	109	107
<b>Total operating revenue</b>	<b>32,427</b>	<b>31,498</b>

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*  
**Note 20. Appropriations**

Particulars	Departmental Outputs		Equity		Total	
	2005 \$'000	2004 \$'000	2005 \$'000	2004 \$'000	2005 \$'000	2004 \$'000
<b>Year ended 30 June 2005</b>						
Balance carried forward from previous year	22	-	-	-	22	-
Appropriation Acts 1 and 3	22,461	22,134	-	-	22,461	22,134
Available for payment of CRF	22,483	22,134	-	-	22,483	22,134
Payment made out of CRF	22,483	22,112	-	-	22,483	22,112
<b>Balance carried forward to next year</b>	-	22	-	-	-	22
Represented by:						
Appropriations Receivable	-	22	-	-	-	22

This table reports on appropriations made by the Parliament of the Consolidated Revenue Fund (CRF) for payment to the Australian Institute of Marine Science. When received by the Institute, the payments made are legally the money of the Institute and do not represent any balance remaining in the CRF.

**NOTES TO AND FORMING PART OF THE  
FINANCIAL STATEMENTS**  
*for the year ended 30 June 2005*

**Note 21. Investments**

Notes

**2005**  
**\$'000**

2004  
\$'000

Investments accounted for under the equity method

**Arafura Timor Research Facility Joint Venture**

The Institute has taken up its 50% share of interests in the facility as at 30 June 2005.

**Financial Performance Statement**

Revenue from joint venture	1,953	-
Share of expenditure for the year	203	-
Net operating surplus from joint venture	1,750	-

Represented:-

**Financial Position Statement**

Assets		
Building	1,609	-
Motor vehicles	15	-
Provision for depreciation	(3)	-
Total non current assets	1,621	-
Cash in bank	122	-
Accounts Receivable	6	-
Total current assets	128	-
<b>Total increase in equity</b>	<b>1,749</b>	<b>-</b>

**AIMS @ JCU Joint Venture**

The Institute has taken a share of the investment that relates directly to the Institute.

**Financial Performance Statement**

Revenue from joint venture	744	42
Expenditure by the Institute on joint venture	24	42
Net operating surplus from joint venture	720	-

Represented:-

**Financial Position Statement**

Asset - non current	720	-
<b>Total increase in equity</b>	<b>720</b>	<b>-</b>
Funds held by AIMS on behalf of the joint venture	2,907	3,858

**SUPPLEMENTARY FINANCIAL INFORMATION (UNAUDITED)***for the year ended 30 June 2005***REVENUE COMPARISON**

	<b>2005</b>	2004	2003	2002	2001
	<b>\$'000</b>	\$'000	\$'000	\$'000	\$'000
Non-Government revenue					
External revenue	<b>5,689</b>	5,368	5,576	4,707	4,401
Interest	<b>985</b>	790	674	629	860
Other revenue	<b>109</b>	158	318	161	179
<b>Total Non-Government revenue</b>	<b>6,783</b>	6,316	6,568	5,497	5,440
Appropriations					
Operating	<b>18,160</b>	17,841	17,202	16,797	16,788
Asset replacement	<b>4,323</b>	4,293	3,636	2,775	1,148
Capital and infrastructure	-	-	3,420	2,811	3,486
Capital use charge	-	-	5,256	4,965	4,635
<b>Total appropriation revenue</b>	<b>22,483</b>	22,134	29,514	27,348	26,057
<b>Other Government revenue</b>					
Revenue related entity	<b>2,696</b>	2,142	-	-	-
<b>Total Other Government revenue</b>	<b>2,696</b>	2,142	-	-	-
<b>Total Revenue from Government</b>	<b>25,179</b>	24,276	29,514	27,348	26,057
<b>Total revenue</b>	<b>31,962</b>	30,592	36,082	32,845	31,497
External revenue ratio   %	<b>20%</b>	20%	21%	19%	20%

External revenue includes consultancies, grants and contract collaborations.

External revenue ratio is total external revenue in relation to external revenue plus operating and asset replacement appropriations.

**SUPPLEMENTARY FINANCIAL INFORMATION (UNAUDITED)***for the ended year 30 June 2005***SOURCE OF EXTERNAL EARNINGS BY INDUSTRY**

	<b>2005</b>	2004	2003	2002	2001
	<b>\$000</b>	\$000	\$000	\$000	\$000
Australian government	<b>466</b>	486	278	430	427
Australian joint government/industry	<b>3,093</b>	2,298	2,065	2,350	1,925
International governments	<b>1,005</b>	765	986	476	744
Australian industry	<b>524</b>	1,173	1,195	1,009	612
International industry	<b>512</b>	528	828	328	155
Sale of goods	<b>89</b>	118	224	114	538
	<b>5,689</b>	5,368	5,576	4,707	4,401

**COOPERATIVE RESEARCH CENTRE (CRC)**

The Institute currently has agreements with one Cooperative Research Centres, Ecologically Sustainable Development in the Great Barrier Reef (known as CRC Reef Centre).

Comparison contributions with respective CRCs are:-

	<b>2005</b>	2004	2003	2002	2001
	<b>\$'000</b>	\$'000	\$'000	\$'000	\$'000
AIMS contribution in kind to the two CRCs were					
CRC Reef	<b>3,138</b>	3,261	2,881	2,765	2,885
CRC Aquaculture	-	-	-	-	141
CRC TS	<b>223</b>				
Research income received from CRCs were -					
CRC Reef	<b>2,658</b>	2,002	1,458	1,790	1,189
CRC Aquaculture	-	-	13	30	74
CRC TS	<b>145</b>	-	-	-	-

**EMPLOYEE STAFF YEARS**

	<b>2005</b>	2004	2003	2002	2001
	<b>No.</b>	No.	No.	No.	No.
Science research staff	<b>102.9</b>	107.0	98.6	92.8	92.6
Research services	<b>52.7</b>	50.7	53.3	57.6	63.1
	<b>155.6</b>	157.7	151.9	150.4	155.7

**SUPPLEMENTARY FINANCIAL INFORMATION (UNAUDITED)***for the year ended 30 June 2005***COST OF OUTPUT BY RESEARCH GROUPS**

	Variable	Salaries	Fixed	Overheads	2004-05 Total	2003-04 Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
<b><i>The Coastal Processes Group</i></b>						
Appropriation	572	1,295	915	1,724	<b>4,506</b>	5,169
External	476	608	496	809	<b>2,389</b>	1,103
	1,048	1,903	1,411	2,533	6,895	6,272
<b><i>The Conservation and Biodiversity Group</i></b>						
Appropriation	858	3,252	2,115	4,329	<b>10,554</b>	11,603
External	1,203	1,016	461	1,352	<b>4,032</b>	4,338
	2,061	4,268	2,576	5,681	14,586	15,941
<b><i>The Marine Biotechnology Group</i></b>						
Appropriation	643	1,993	1,957	2,653	<b>7,246</b>	6,840
External	508	520	123	692	<b>1,843</b>	1,417
	1,151	2,513	2,080	3,345	9,089	8,257
<b>Total Summary</b>						
Appropriation	2,073	6,540	4,987	8,705	<b>22,305</b>	23,612
External	2,187	2,144	1,080	2,854	<b>8,265</b>	6,858
<b>Total</b>	4,260	8,684	6,067	11,559	30,570	30,470

# Appendices

- ▶ Appendix 1 Legislative Foundation and Ministerial Powers
- ▶ Appendix 2 Performance Indicators
- ▶ Appendix 3 Freedom of Information Statement
- ▶ Appendix 4 Science Publications 2004
- ▶ Appendix 5 Membership of External Committees and Non-government Organisations





# 1. Legislative foundation and 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 1972* (AIMS Act).

## FUNCTIONS OF INSTITUTE

(1) The functions of the Institute are:

- (a) to carry out research and development in relation to:
  - (i) marine science and marine technology; and
  - (ii) the application and use of marine science and marine technology; and
- (b) to encourage and facilitate the application and use of the results of research and development of that kind; and
- (c) to arrange for carrying out research and development of that kind; and
- (d) to co-operate with other institutions and persons in carrying out research and development of that kind; and
- (e) to provide any other institution or person with facilities for carrying out research and development of that kind; and
- (f) to collect and disseminate information relating to:
  - (i) marine science and marine technology; and
  - (ii) the application and use of marine science and marine technology; and, in particular, to publish reports and other papers; and
- (g) to produce, acquire, provide and sell goods, and to provide services, in connection with:
  - (i) marine science and marine technology; and
  - (ii) the application and use of marine science and marine technology; and
- (h) to make available to other persons, on a commercial basis, the knowledge, expertise, equipment, facilities, resources and property of the Institute; and
- (i) to do anything incidental or conducive to the performance of any of the functions in paragraphs (a) to (h).

## POWERS OF THE INSTITUTE

Under Section 10 of the AIMS Act the Institute is empowered 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 science technology; and the application and use of marine science and marine technology.

## MINISTERIAL POWERS OF DIRECTION

Under Section 10 (1) of the AIMS 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 Institute to enter into a contract involving the payment of Institute funds of an amount exceeding \$1 million, or higher amount if specified in the regulations (Section 42); and
9. Appointing a Committee to assist Council and approving the terms and conditions of members (Section 45).
10. Out of money appropriated by the Parliament for the purpose, the Finance Minister has power to lend money to the Institute (Section 42A);
11. The Finance Minister has the power to provide written approval for the Institute to borrow money from persons other than the Commonwealth (Section 42B); and
12. The Finance Minister has the power to guarantee borrowings of the Institute (Section 42C).



## 2. Performance indicators

AIMS has reported against indicators that measure the efficiency and effectiveness of its research effort since they were introduced in the Triennium Funding Agreements. These indicators are agreed among AIMS, the Minister for Science, Education and Training and the Minister and Finance. AIMS is committed to continuous improvement in its performance reporting framework and is planning to implement external expert review of its research late in 2005.

Ongoing programmes of evaluation at AIMS include:

- ▶ The assessment and reporting of performance against performance indicators
- ▶ The regular submission of research findings to external review by scientific peers
- ▶ The critical assessment of patent applications
- ▶ The annual staff performance review cycle.

Major AIMS performance indicators are detailed in the following table.

### New knowledge and collaborative R&D

Indicator	Criteria	Regularity
AIMS investment in priority areas <sup>1</sup>	The absolute and percentage change in the level of appropriation expenditure in priority areas over the triennium against the planned profile documented in the AIMS Research Plan	Triennial
Scientific publications	Number and type of publications (peer reviewed papers, technological reports and reports written for external consultancies). Categorisation to be consistent with method used by Australian universities.	Annual
Citation analysis	Retrospective citation analysis using Science Citation Index	5 Yearly
Postgraduate supervision	Number of postgraduate students (jointly) supervised	Annual
Recognition by peers	Distinguished awards, major prizes, nominations as host agency by internationally recognised researchers	Annual
External assessment and review	New assessment process to be established 2004-05. Aim for timely implementation of recommendations	Ongoing
Co-investment in research	Joint ventures/Strategic alliances	Annual
	Number of collaborations (collaborative research projects)	Annual

### Research services, specialised consulting

External revenue	External revenue by source and as a percentage of total funds	Annual
Adoption by users	Selection <sup>2</sup> of practices, instruments and processes developed by AIMS that have been adopted by users in industry, government and the community. Includes examples where there has been a change in user practices resulting from adoption of the technology developed at AIMS or in response to information and policy advice provided by AIMS. Commercially sensitive items not reported.	Annual
Contracts successfully completed	Number of contracts completed and proportion completed on time	Annual
Input to policy-making and advice	Number of advisory submissions	Annual
Contribution to teaching	Number of conjoint teaching positions	Annual
Customer survey	Feedback from key stakeholders and partners	Triennial

### Licensing, patenting and start-ups

Patents	Number of patents held reported by number of separate technologies	Annual
Commercial disclosures	Number	Annual
Commercial arrangements	Number	Annual
Start-up companies	Number and operating status	Annual

<sup>1</sup> Includes National Research Priorities

<sup>2</sup> Some items may be relevant for more than one financial year and will be reported on a three-year rolling basis.

## 3. Freedom of information statement

The *Freedom of Information Act 1982* (FOI Act) requires each Australian 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 at pages 69-70 of this Annual Report.

### DOCUMENTS AVAILABLE FOR INSPECTION

Copies of the Institute's publications and reports available on request are listed below. With the exception of final project reports, they are generally free of charge. Other information may be available, subject to assessment on the grounds of, for example, 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 MC Qld 4810  
Telephone: (07) 4753 4319  
Facsimile: (07) 4772 5852



Strategic Directions	Files, publications*
Research Plan	Files, publications*
Annual Operational Plan	Files, unpublished documents
Project details	Databases, 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 documents
Mailing lists	Databases

These documents are also available on the Institute's website ([www.aims.gov.au](http://www.aims.gov.au)).

### CUSTOMER SERVICE CHARTER

The AIMS Service Charter for dealing with clients is posted to our website. The Institute welcomes feedback on how well it is delivering our services against the standards set in this charter, and has included a feedback form on the website. Both the charter and the feedback form can be found at [www.aims.gov.au/pages/about/corporate/csc-01.html](http://www.aims.gov.au/pages/about/corporate/csc-01.html)

## 4. Science publications 2004

### BOOK AND BOOK CHAPTERS

- Alongi DM (2004) Ecosystem types and processes. Chapter 10. pp. 317-352. In: Robinson AR, Brink K (eds) *The Sea: Ideas and observations on progress in the studies of the seas. Volume 13 The Global Coastal Ocean: Multiscale Interdisciplinary Processes*. Harvard University Press. 1033 p.
- Alongi DM (2004) The role of mangrove forests in sustaining coastal productivity in Southeast Asia. pp. 3-15. In: Phang SE, Ching CV, Chye HS, Mokhtar N, Sim JOL (eds) *Marine Science into the New Millennium: New perspectives & Challenges*. Ministry of Science, Technology and Innovation, Malaysia. 691 p.
- Bourne DG, Evans-Illidge EA, Llewellyn LE (2004) Marine microbes for biodiscovery: just the tip of an iceberg. pp. 185-205. In: Kurtboke I, Swings J (eds) *Microbial Genetic Resources and Biodiscovery*. World Federation of Culture Collections. 400 p.
- Brinkman R, Wolanski EJ, Spagnol S (2004) Field and model studies of the nepheloid layer in coastal waters of the Great Barrier Reef, Australia. pp. 225-229. In: Jirka G, Uijttewaal W (eds) *Shallow Flows*. A.A. Balkema Publishers, Netherlands. 684 p.
- Chong VC, Alongi DM, Natin P, Ooi AL, Sasekumar A, Wong SC (2004) Effects of fish cage aquaculture on water chemistry, plankton and macrobenthos abundance in Matang mangrove estuaries (Perak, Peninsular Malaysia). pp. 307-324. In: Phang SE, Ching CV, Chye HS, Mokhtar N, Sim JOL (eds) *Marine Science into the New Millennium: New perspectives & Challenges*. Ministry of Science, Technology and Innovation, Malaysia. 691 p.
- Clough BF, Tuan VA, Johnston DJ, Phillips MJ (2004) Brackish-water shrimp culture on small family-based farms. pp. 399-409. In: Phang SE, Ching CV, Chye HS, Mokhtar N, Sim JOL (eds) *Marine Science into the New Millennium: New perspectives & Challenges*. Ministry of Science, Technology and Innovation, Malaysia. 691 p.
- DeVantier LM (2004) Coral reefs. pp. 51-100. In: Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) *Standard survey methods for key habitats and key species in the Red Sea and Gulf of Aden*. PERGSA technical series no. 10, Jeddah, Kingdom of Saudi Arabia 302 p.
- Hill J, Wilkinson CR (2004) *Methods for Ecological Monitoring of Coral Reefs: A Resource for Managers*. Australian Institute of Marine Science and Reef Check. 118 p.
- Kaiser MJ, Thomas DN, Hall SJ (2004) Habitat Modification. Chapter 23. pp. 927-970. In: *The Sea: Ideas and observations on progress in the studies of the seas. Volume 13 The Global Coastal Ocean: Multiscale Interdisciplinary Processes*. Harvard University Press. 1033 p.
- Miller I, Sweatman H (2004) Status of coral reefs in Australia and Papua New Guinea in 2004 (Chapter 11) Vol 2, pp 303-335. In: Wilkinson C (ed) *Status of Coral Reefs of the World: 2004*. Australian Institute of Marine Science, Townsville. 572 p.

- Uthicke S (2004) Over fishing of holothurians: lessons from the Great Barrier Reef. pp. 163-171. In: Lovatelli A, Conand C, Purcell S, Uthicke S, Hamel JF, Mercier A (eds) Advances in sea cucumber aquaculture and management. FAO Fisheries Technical Paper 463. FAO, 425 p.
- Wilkinson CR (ed) (2004) Status of Coral Reefs of the World: 2004. Australian Institute of Marine Science. 572 p.

### THESES

- Arthur R (2004) Patterns and processes of reef recovery and human resource use in the Lakshadweep Islands, Indian Ocean. PhD Thesis, James Cook University.
- Puotinen M (2004) Tropical cyclone impacts on coral reef communities: modelling the disturbance regime in the Great Barrier Reef region, 1969-2003. PhD Thesis, James Cook University.
- Rotmann, S (2004) Tissue thickness as a tool to monitor the stress response of massive *Porites* corals to turbidity impact on Lihir Island, Papua New Guinea. PhD Thesis. James Cook University.

### JOURNAL ARTICLES

- Alongi DM, Wattayakorn G, Boyle S, Tirendi F, Payn C, Dixon P (2004) Influence of roots and climate on mineral and trace element storage and flux in tropical mangrove soils. *Biogeochemistry* 69: 105-123.
- Alongi DM, Wattayakorn G, Tirendi F, Dixon P (2004) Nutrient capital in different aged forests of the mangrove *Rhizophora apiculata*. *Botanica Marina* 47: 116-124.
- Alongi DM, Sasekumar A, Chong VC, Pfitzner J, Trott LA, Tirendi F, Dixon P, Brunskill GJ (2004) Sediment accumulation and organic material flux in a managed mangrove ecosystem: estimates of land-ocean-atmosphere exchange in peninsular Malaysia. *Marine Geology* 208: 383-402.
- Anderson MJ, Thompson AA (2004) Multivariate control charts for ecological and environmental monitoring. *Ecological Applications* 14: 1921-1935.
- Anthony K, Ridd P, Orpin A, Larcombe P, Lough JM (2004) Temporal variation of light availability in coastal benthic habitats: effects of clouds, turbidity, and tides. *Limnology and Oceanography* 49: 2201-2211.
- Apponyi MA, Pukala TL, Brinkworth CS, Maselli VM, Bowie JH, Tyler MJ, Booker GW, Wallace JC, Carver JA, Separovic F, Doyle J, Llewellyn LE (2004) Host-defence peptides of Australian anurans: structure, mechanism of action and evolutionary significance. *Peptides* 25: 1035-1054.
- Ayliffe L, Bird MI, Gagan MK, Isdale PJ, Scott-Gagan H, Parker B, Griffin D, Nongkas M, McCulloch MT (2004) Geochemistry of coral from Papua New Guinea as a proxy for ENSO ocean-atmosphere interactions in the Pacific Warm Pool. *Continental Shelf Research* 24: 2343-2356.
- Bandaranayake WM, Boyle S, Nichols PD (2004) Lipid and fatty acid composition of fresh and saltwater barramundi, *Lates calcarifer* (Bloch): variability in lipid composition associated with environment. *Trends in Comparative Biochemistry and Physiology* 10: 111-117.

- Bastidas C, Fabricius KE, Willis BL (2004) Demographic processes in the soft coral *Sinularia flexibilis* leading to local dominance on coral reefs. *Hydrobiologia* 530: 433 – 441.
- Berkelmans R, De'ath G, Kininmonth S, Skirving WJ (2004) A comparison of the 1998 and 2002 coral bleaching events on the Great Barrier Reef: spatial correlation patterns, and predictions. *Coral Reefs* 23: 74-83.
- Bourne DG, Young N, Webster NS, Payne M, Salmon M, Demel S, Hall MR (2004) Microbial community dynamics in a larval aquaculture system of the tropical rock lobster, *Panulirus ornatus*. *Aquaculture* 242: 31-51.
- Bowden BF, McCool BJ, Willis RH (2004) Lihoudine, a novel spiro polycyclic aromatic alkaloid from the marine sponge *Suberea* n. sp. (Aplysinellidae, Verongida). *Journal of Organic Chemistry* 69: 7791-7793.
- Brunskill GJ (2004) New Guinea and its coastal seas, a testable model of wet tropical coastal processes: an introduction to Project TROPICS. *Continental Shelf Research* 24: 2273-2295.
- Brunskill GJ, Zagorskis I, Pfitzner J, Ellison JC (2004) Sediment and trace element depositional history from the Ajkwa River estuarine mangroves of Irian Jaya (West Papua), Indonesia. *Continental Shelf Research* 24: 2535-2551.
- Burns KA, Greenwood PF, Benner R, Brinkman D, Brunskill GJ, Codi S, Zagorskis I (2004) Organic biomarkers for tracing carbon cycling in the Gulf of Papua (Papua New Guinea). *Continental Shelf Research* 24: 2373-2394.
- Caley MJ, Schwarzkopf L (2004) Complex growth rate evolution in a latitudinally widespread species. *Evolution* 58: 862-869.
- Cappo M, Speare PJ, De'ath G (2004) Comparison of baited remote underwater video stations (BRUVS) and prawn (shrimp) trawls for assessments of fish biodiversity in inter-reefal areas of the Great Barrier Reef Marine Park. *Journal of Experimental Marine Biology and Ecology* 302: 123-152.
- Codi King S, Humphrey C, Klumpp DW, Delean S (2004) Barramundi as an indicator species for environmental monitoring in North Queensland, Australia: laboratory vs field studies. *Environmental Toxicology and Chemistry* 23: 2737-2744.
- da Silva ET, Ridd MJ, Klumpp DW, Ridd P (2004) Relative contribution of food and water to the cadmium burden in *Balanus amphitrite* in an urban tidal creek discharging into the Great Barrier Reef lagoon. *Estuarine Coastal and Shelf Science* 60: 313-324.
- de la Vega E, Degnan BM, Hall MR, Cowley JA, Wilson KJ (2004) Quantitative real-time RT-PCR demonstrates that handling stress can lead to rapid increases of gill-associated virus (GAV) infection levels in *Penaeus monodon*. *Diseases of Aquatic Organisms* 59: 195-203.
- DeVantier LM, Alcala A, Wilkinson CR (2004) The Sulu-Sulawesi Sea: environmental and socioeconomic status, future prognosis and ameliorative policy options. *Ambio* 33: 88-97.
- Diaz-Pulido G, McCook LJ (2004) Effects of live coral, epilithic algal communities and substrate type on algal recruitment. *Coral Reefs* 23: 225-233.
- Doherty PJ, Dufour V, Galzin R, Hixon M, Meekan MG, Planes S (2004) High mortality during settlement is a population bottleneck for a tropical surgeonfish. *Ecology* 85: 2422-2428.
- Duckworth AR, Battershill CN, Schiel DR (2004) Effects of depth and water flow on growth, survival and bioactivity of two temperate sponges cultured in different seasons. *Aquaculture* 242: 237-250.

- Duckworth AR, Samples GA, Wright AE, Pomponi SA (2004) In vitro culture of the ascidian *Ecteinascidia turbinata* to supply the antitumor compounds ecteinascidins. *Aquaculture* 241: 427-439.
- Dunlap WC, Fujisawa A, Yamamoto Y, Inoue M (2004) Tropical UV-tolerant bacteria may provide a pharmacomimetic model for anti-aging research and cancer prevention. *Marine Biotechnology* 6: S223-S230.
- Egger B, Meekan MG, Salzburger W, Mwape L, Makasa L, Shapola R, Sturmbauer C (2004) Validation of the periodicity of increment information in otoliths of a cichlid fish from Lake Tanganyika eastern Africa. *Journal of Fish Biology* 64: 1272-1284.
- Elvidge C, Dietz JB, Berkemans R, Andrefouet S, Skirving W, Strong AE, Tuttle BT (2004) Satellite observation of Keppel Islands (Great Barrier Reef) 2002 coral bleaching using IKONOS data. *Coral Reefs* 23: 123-132.
- Fabricius KE, Metzner J (2004) Scleractinian walls of mouths: predation on coral larvae by corals. *Coral Reefs* 23: 245-248.
- Fabricius KE, De'ath G (2004) Identifying ecological change and its causes: a case study on coral reefs. *Ecological Applications* 14: 1448-1465.
- Fabricius KE, Mieog JC, Colin PL, Idip D, van Oppen MJH (2004) Identity and diversity of coral endosymbionts (zooxanthellae) from three Palauan reefs with contrasting bleaching, temperature and shading histories. *Molecular Ecology* 13: 2445-2458.
- Fenner D, Banks K (2004) Orange cup coral *Tubastraea coccinea* invades Florida and the Flower Garden Banks, Northwestern Gulf of Mexico. *Coral Reefs* 23: 505-507.
- Gereta E, Meing'ataki GO, Mduma S, Wolanski EJ (2004) The role of wetlands in wildlife migration in the Tarangire ecosystem, Tanzania. *Wetlands Ecology and Management* 12: 285-299.
- Gereta E, Mwangomo E, Wolanski EJ (2004) The influence of wetlands in regulating water quality in the Seronera River, Serengeti National Park, Tanzania. *Wetlands Ecology and Management* 12: 301-307.
- Gilmour JP (2004) Asexual budding in Fungiid corals. *Coral Reefs* 23: 595.
- Gilmour JP (2004) Size-structures of populations of the mushroom coral *Fungia fungites*: the role of disturbance. *Coral Reefs* 23: 493-504.
- Green DH, Llewellyn LE, Negri AP, Blackburn SI, Bolch CJS (2004) Phylogenetic and functional diversity of the cultivable bacterial community associated with the paralytic shellfish poisoning dinoflagellate *Gymnodinium catenatum*. *FEMS Microbiology Ecology* 47:345-347.
- Halford AR, Cheal AJ, Ryan DAJ, Williams DMcB (2004) Resilience to large-scale disturbance in coral and fish assemblages on the Great Barrier Reef. *Ecology* 87: 1892-1905.
- Halide H, Brinkman R, Ridd P (2004) Designing bamboo wave attenuators for mangrove plantations. *Indian Journal of Marine Science* 33(3): 220-225.
- Hall S, Mainprize B (2004) Towards ecosystem-based fisheries management. *Fish and Fisheries* 5: 1-20.
- Harrington L, Fabricius KE, Death G, Negri AP (2004) Recognition and selection of settlement substrata determine post-settlement survival in corals. *Ecology* 85: 3428-3437.
- Humphrey C, Klumpp DW, Raethke N (2004) Ambon damsel (*Pomacentrus amboinensis*) as a bioindicator organism for the Great Barrier Reef: responses to chlorpyrifos. *Bulletin of Environmental Contamination and Toxicology* 72: 888-895.

- Kininmonth S, Bainbridge S, Atkinson I, Gill E, Barral L, Vidaud R (2004) Sensor Networking the Great Barrier Reef. *Spatial Sciences Queensland Journal*, October 2004, pp 35-39.
- Kuehl S, Brunskill GJ, Burns KA, Fugate D, Kniskern T, Meneghini L (2004) Nature of sediment dispersal off the Sepik River, Papua New Guinea: Preliminary sediment budget and implications for margin processes. *Continental Shelf Research* 24: 2417-2429.
- Kwak S, Klumpp DW (2004) Temporal variation in species composition and abundance of fish and decapods of a tropical seagrass bed in Cockle Bay, north Queensland, Australia. *Aquatic Botany* 78: 119-134.
- Lajeunesse TC, Bhagooli R, Hidaka M, DeVantier LM, Done TJ, Schmidt GW, Fitt WK, Hoegh-Guldberg O (2004) Closely-related *Symbiodinium* spp. differ in relative dominance within coral reef host communities across environmental, latitudinal and biogeographic gradients. *Marine Ecology Progress Series* 284: 147-161.
- Little AF, van Oppen MJH, Willis BL (2004) Flexibility in algal endosymbioses shapes growth in reef corals. *Science* 304: 1492.
- Llewellyn LE, Negri AP, Quillam M (2004) High affinity for the rat brain sodium channel of newly discovered hydroxybenzoate saxitoxin analogues from the dinoflagellate *Gymnodinium catenatum*. *Toxicon* 43: 101-104.
- Llewellyn LE, Robillot C, Negri AP (2004) Inappropriate use of food quality standards for seafood derived complementary medicines. *Medical Journal of Australia* 180:250-251.
- Lough JM (2004) A strategy to improve the contribution of coral data to high-resolution paleoclimatology. *Palaeogeography, Palaeoclimatology and Palaeoecology* 204: 115-143.
- MacKenzie J, Munday PL, Willis BL, Miller DJ, van Oppen MJH (2004) Unexpected patterns of genetic structuring among locations but not colour morphs in *Acropora nasuta* (Cnidaria; Scleractinia). *Molecular Ecology* 13: 9-20.
- McNeil BI, Matear RJ, Barnes DJ (2004) Coral reef calcification and climate change: the effect of ocean warming. *Geophysical Research Letters* 31(22): L22309-22312.
- Mercurio P, Burns KA, Negri AP (2004) Testing the ecotoxicology of vegetable versus mineral based lubricating oils: 1. Degradation rates using tropical marine microbes. *Environmental Pollution* 129: 165-173.
- Mercurio P, Burns KA, Cavanagh JE (2004) Testing the ecotoxicology of vegetable versus mineral based lubricating oils: 2. Induction of mixed function oxidase enzymes in barramundi, *Lates calcarifer*, a tropical fish species. *Environmental Pollution* 129: 175-182.
- Mercurio P, Negri AP, Burns KA, Heyward A (2004) Testing the ecotoxicology of vegetable versus mineral based lubricating oils: 3. Coral fertilization and adult corals. *Environmental Pollution* 129:183-194.
- Moore BD, Wallis IR, Palá-Paúl J, Brophy JJ, Willis RH, Foley WJ (2004) Antiherbivore chemistry of Eucalyptus - cues and deterrents for marsupial folivores. *Journal of Chemical Ecology* 30: 1743-1769.
- Muller A, Gagan MK, Lough JM (2004) Effect of early marine diagenesis on coral reconstructions of surface-ocean  $^{13}\text{C}/^{12}\text{C}$  and carbonate saturation state. *Global Biogeochemical Cycles* 18: GB1033-1041.
- Negri AP, Bunter O, Jones B, Llewellyn LE (2004) Effects of the bloom-forming algae *Trichodesmium erythraeum* on the pearl oyster *Pinctada maxima*. *Aquaculture* 232: 91-102.
- Negri AP, Hales LT, Battershill CN, Wolff CWW, Webster NS (2004) TBT contamination identified in Antarctic marine sediments. *Marine Pollution Bulletin* 48: 1142-1144.

- Nevalainen TJ, Peuravuori HJ, Quinn R, Llewellyn LE, Benzie JAH, Fenner PJ, Winkel KD (2004) Phospholipase A2 in cnidaria. *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology* 139: 731-735.
- Orpin A, Brunskill GJ, Zagorskis I, Woolfe KJ (2004) Patterns of mixed siliciclastic-carbonate sedimentation adjacent to a large dry-tropics river on the central Great Barrier Reef shelf, Australia. *Australian Journal of Earth Sciences* 51: 665-683.
- Paliyavuth C, Clough BF, Patanaponpaiboon P (2004) Salt uptake and shoot water relations in mangroves. *Aquatic Botany* 78: 349-360.
- Payne M, Oakey J, Owens L (2004) The ability of two different *Vibrio* spp. bacteriophages to infect *Vibrio harveyi*, *Vibrio cholerae* and *Vibrio mimicus*. *Journal of Applied Microbiology* 97: 663-672.
- Pfützner J, Brunskill GJ, Zagorskis I (2004) <sup>137</sup>Cs and excess <sup>210</sup>Pb deposition patterns in estuarine and marine sediment in the central region of the Great Barrier Reef Lagoon, north-eastern Australia. *Journal of Environmental Radioactivity* 76: 81-102.
- Robertson A, Stirling D, Robillot C, Llewellyn LE, Negri AP (2004) First report of saxitoxin in octopi. *Toxicon* 44:765-771.
- Robillot C, Hennion M (2004) Issues arising when interpreting the results of the protein phosphatase 2A inhibition assay for the monitoring of microcystins. *Analytica Chimica Acta* 512: 339-346.
- Sampey A, Meekan MG, Carleton JH, McKinnon AD, McCormick MI (2004) Temporal patterns in distributions of tropical fish larvae on the North-west Shelf of Australia. *Marine and Freshwater Research* 55: 473-487.
- Simpson SD, Meekan MG, McCauley RD, Jeffs A (2004) Attraction of settlement-stage coral reef fishes to reef noise. *Marine Ecology Progress Series* 276: 263-268.
- Swadling KM, McKinnon AD, De'ath G, Gibson JAE (2004) Life cycle plasticity and differential growth and development in marine and lacustrine populations of an Antarctic copepod. *Limnology and Oceanography* 49: 644-655.
- Trott LA, McKinnon AD, Alongi DM, Davidson A, Burford M (2004) Carbon and nitrogen processes in a mangrove creek receiving shrimp farm effluent. *Estuarine Coastal and Shelf Science* 59: 197-207.
- Uthicke S, O'Hara TD, Byrne M (2004) Species composition and molecular phylogeny of the Indo-Pacific teatfish (Echinodermata: Holothuroidea) bêche-de-mer fishery. *Marine and Freshwater Research* 55: 837-848.
- Uthicke S, Purcell S (2004) Preservation of genetic diversity in restocking of the sea cucumber *Holothuria scabra* investigated by allozyme electrophoresis. *Canadian Journal of Fisheries and Aquatic Sciences* 61:519-528.
- Uthicke S, Welch D, Benzie JAH (2004) Slow growth and lack of recovery in overfished holothurians on the Great Barrier Reef: Evidence from DNA fingerprints and repeated large-scale surveys. *Conservation Biology* 18: 1395-1404.
- van Oppen MJH (2004) Mode of zooxanthella transmission does not affect zooxanthella diversity in acroporid corals. *Marine Biology* 144: 1-7.
- van Oppen MJH, Koolmees EM, Veron JEN (2004) Patterns of evolution in the scleractinian coral genus *Montipora* (Acroporidae). *Marine Biology* 144: 9-18.



- Victor S, Golbuu Y, Wolanski EJ, Richmond RH (2004) Fine sediment trapping in two mangrove-fringed estuaries exposed to contrasting land-use intensity, Palau, Micronesia. *Wetlands Ecology and Management* 12: 277-283.
- Walsh J, Nitttrouer C, Palinkas CM, Ogston AS, Sternberg R, Brunskill GJ (2004) Clinoform mechanics in the Gulf of Papua, New Guinea. *Continental Shelf Research* 24: 2487-2510.
- Webster NS, Negri AP, Munro M, Battershill CN (2004) Diverse microbial communities inhabit Antarctic sponges. *Environmental Microbiology* 6: 288-300.
- Webster NS, Smith LD, Heyward A, Watts JEM, Webb RI, Blackall LL, Negri AP (2004) Metamorphosis of a scleractinian coral in response to microbial biofilms. *Applied and Environmental Microbiology* 70: 1213-1221.
- Wild C, Huettel M, Kluter A, Krems SG, Rasheed MYM, Jørgensen BB (2004) Coral mucus functions as an energy carrier and particle trap in the reef ecosystem. *Nature* 428: 66-70.
- Wolanski EJ (2004) The Serengeti: an example of successful development through conservation made possible by north-south partnership. *Bulletin of Academie Royale des Sciences d'Outre-Mer* 50: 261-269.
- Wolanski EJ (2004) Ecohydrology. *Wetlands Ecology and Management* 12: iii.
- Wolanski EJ, Boorman L, Chicharo L, Langlois-Saliou E, Lara R, Plater AJ, Uncles R, Zalewski M (2004) Ecohydrology as a new tool for sustainable management of estuaries and coastal waters. *Wetlands Ecology and Management* 12: 235-276.
- Wolanski EJ, Colin PL, Naithani J, Deleersnijder E, Golbuu Y (2004) Large amplitude, leaky, island-generated, internal waves around Palau, Micronesia. *Estuarine Coastal and Shelf Science* 60: 705-716.
- Wolanski EJ, Richmond RH, McCook LJ (2004) A model of the effects of land-based, human activities on the health of coral reefs in the Great Barrier Reef and in Fouha Bay, Guam, Micronesia. *Journal of Marine Systems* 46: 133-144.
- Wolanski EJ, Spagnol S, Williams DK (2004) The impact of damming the Ord River on the fine sediment budget in Cambridge Gulf, northwestern Australia. *Journal of Coastal Research* 20: 801-807.
- Wolanski EJ, Williams D, Spagnol S, Chanson H (2004) Undular tidal bore dynamics in the Daly Estuary, Northern Australia. *Estuarine Coastal and Shelf Science* 60: 629-636.
- Wooldridge S, Done TJ (2004) Learning to predict large-scale coral bleaching from past events: A Bayesian approach using remotely sensed data, *in-situ* data, and environmental proxies. *Coral Reefs* 23: 96-108.

## CONFERENCE PAPERS

- Byrne M, Cisternas P, Hoggett A, O'Hara T, Uthicke S (2004) Diversity of echinoderms at Raine Island, Great Barrier Reef. pp. 159-163. In: Heinzeller T, Nebelsick JH (eds) *Echinoderms: Munchen. Proceedings of the 11th International Echinoderms Conference, 8-10 October 2003, Munich, Germany*. A.A. Balkema Publishers. 360 p.
- Byrne M, Smoothey A, Hoggett A, Uthicke S (2004) Population biology of shallow water holothuroids and ophiuroids from Raine Island and Moulter Cay, Northern Great Barrier Reef. pp. 165-169. In: Heinzeller T, Nebelsick JH (eds) *Echinoderms: Munchen. Proceedings of the 11th International Echinoderms Conference, 8-10 October 2003, Munich, Germany*. A.A. Balkema Publishers. 360 p.



- Evans-Illidge EA (2004) Oceans of Opportunity: Seeking commercial and sustainable uses of Australia's marine biodiversity. pp. 43-58. In: APEC Workshop on Trade and the Sustainable Use of Biodiversity. 15-16 March 2004. Jakarta, Indonesia. Australian Government Department of Foreign Affairs and Trade, Canberra.
- Gitterle T, Gjerde B, Lozano C, Johansen H, Arturo Suarez J, Suarez A, Faillace J, Erazo C, de la Vega E, Rye M (2004) Selective breeding of *Litopenaeus vannamei* in Colombia. pp. 121-125. In: Goarant C, Harache Y, Mugnier C (eds) Styli 2003. Trente ans de crevetticulture en Nouvelle-Calédonie. Noumea-Kone, 2-6 juin 2003. Ed. IFREMER, Actes Colloq, 38. IFREMER. 279 p.
- Hall MR (2004) Physiological response to stress and health implications in Crustacea. pp. 39-56. In: Goarant C, Harache Y, Mugnier C (eds) Styli 2003. Trente ans de crevetticulture en Nouvelle-Calédonie. Noumea-Kone, 2-6 juin 2003. Ed. IFREMER, Actes Colloq, 38. IFREMER. 279 p.
- Hall M, McKinnon D, Horne M, Southgate P, Duggan S, Steffans A, Salmon M, Kenway M (2004) Live and formulated feeds: challenges, capabilities and research at the Australian Institute of Marine Science (AIMS). pp. 47-51. In: Kolkovski S, Heine J, Clarke S (eds) The Second Hatchery Feeds and Technology Workshop. Department of Fisheries, Western Australia.
- Ley JA, Halliday I (2004) A key role for Marine Protected Areas in sustaining a regional Barramundi *Lates calcarifer* in mangrove-dominated estuaries: from Northern Australia. pp 225-236. In: Brooke Shipley J (ed) Aquatic protected areas as fisheries management tools. American Fisheries Society Symposium vol 42. American Fisheries Society.
- MacBeth M, McPhee C, Burke M, Bartlett J, Jones C, Knibb W, Kenway MJ, Wilson KJ (2004) Genetic selection of aquaculture organisms including prawns with a special focus on the way to integrate a breeding programme into the private industry. pp. 106-112. In: Goarant C, Harache Y, Mugnier C (eds) Styli 2003. Trente ans de crevetticulture en Nouvelle-Calédonie. Noumea-Kone, 2-6 juin 2003. Ed. IFREMER, Actes Colloq, 38. IFREMER. 279 p.

## REPORTS

- Battershill CN, Harvey E, Evans-Illidge EA, Motti C, Fromont J, Abdo D, Whalan S (2004) New Targets for Aquaculture. Stage 1. Fisheries Research and Development Corporation Project 2000/231. Australian Institute of Marine Science. 168 p.
- Bird J, Steinberg CR, Brinkman R, McAllister F (2004) Biological and Physical Environment at Scott Reef: 2003 to 2004. II. Physical Environment. A report for Joint Venture Partners of WA 33-P (Woodside Energy Operator). Australian Institute of Marine Science. 64 p.
- Burnell JN, Chandler D, Cole S, Doyle J, Gitlits A, Haines DS, Kalc-Wright G, Llewellyn LE, Ludke S, McHardy S, Motti C, Tapiolas DM, Yin P (2004) Screening of marine organisms and compounds for C4-specific and pre-emergent herbicidal activity. James Cook University and Australian Institute of Marine Science. 345 p.
- Burns KA, Brinkman D, Poulsen A, Delean S (2004) Trace analysis of hydrocarbons in coral cores from Saudi Arabia [electronic resource]. CEW/AIMS 2003. Australian Institute of Marine Science. 324 p.

- Dinsdale E, Smith LD (2004) Broudscale survey of coral condition on the reefs of the Easter Group of the Houtman Abrolhos Islands. James Cook University, Australian Institute of Marine Science and CRC Reef Research Centre. 20 p.
- Done TJ, Humphreys C, Wilson BR (2004) A comparative analysis of the Cape Range - Ningaloo Reef area with other similar properties. Report to the Australian Government Department of the Environment and Heritage. Australian Institute of Marine Science. 40 p.
- Hair C, Doherty PJ (2004) Development of new artisanal fisheries based on the capture and culture of postlarval coral reef fish. Extension report for the ACIAR Restricted Project FIS/98/13. ICLARM WorldFish Center. 104 p.
- Klump DW, Alongi DM (2004) Minimizing nutrient losses from agricultural and agrarian village systems to waterways in China. Science Programme 1: Nanbian Ecovillage Project. Final report to Greenfields Group and DIST. Australian Institute of Marine Science. 65 p.
- Meekan MG, Cappel M (2004) Non-destructive techniques for rapid assessment of shark abundance in northern Australia. Produced for Australian Government Department of Agriculture, Fisheries and Forestry. Australian Institute of Marine Science. 29 p.
- Oxley W G, Emslie MJ, Muir P, Thompson AA (2004) Marine Surveys undertaken in the Lihou Reef National Nature Reserve, March 2004. Produced for the Department of the Environment and Heritage. Australian Institute of Marine Science. 74 p.
- Oxley WG, Ayling AM, Cheal AJ and Osborne K (2004) Marine surveys undertaken in the Elizabeth and Middleton Reefs Marine National Nature Reserve, December 2003. Produced for the Department of the Environment and Heritage. Australian Institute of Marine Science. 64 p.
- Pitcher CR, Wassenberg T, Cappel M, Smith GP, Austin M, Gordon S, Bustamante RH, Moeseneder CH, Speare PJ, Kennedy JA, Doherty PJ, Hooper JNA (2004) Dynamics of large sessile seabed fauna, important for structural fisheries habitat and biodiversity of marine ecosystems - and use of these habitats by key finfish species. CSIRO Marine Research and Fisheries Research and Development Corporation. 302 p.
- Rees M, Heyward A, Cappel M, Speare PJ and Smith LD (2004) Ningaloo Marine Park - initial survey of seabed biodiversity in intermediate and deep waters (March 2004). Produced for the Department of the Environment and Heritage. Australian Institute of Marine Science. 54 p.
- Richmond R, Hamnett M, Wolanski EJ, Vuki V, Quinata L, Rongo T, Anderson C, Cain M (2004) Collaborative watershed management in Micronesia: the experience in Umatat, Guam. Social Science Research Institute, University of Hawai'i. 22 p.
- Sellars R, Wolff CWW, Duckworth AR, Ruscoe I (2004) Investigating sources of broodstock and growout sites for the farming of sponges in regional Northern Territory. Final Report. Fisheries Research and Development Corporation Project No. 2003/248. NT Department of Business, Industry and Resource Development, Darwin. 20 p.
- Smith LD, Gilmour JP, Bird J (2004) Biological and Physical Environment at Scott Reef: 2003 to 2004. I: Executive Summary. Produced for JVP WA 33-P (Woodside Energy Pty Ltd Operator). Australian Institute of Marine Science. 10 p.
- Smith LD, Gilmour JP, Rees M, Lough J, Halford A, Underwood J, Van Oppen M, Heyward A (2004) Biological and Physical Environment at Scott Reef: 2003 to 2004. III: Biological Environment. Produced for JVP WA 33-P (Woodside Energy PTY LTD Operator). Australian Institute of Marine Science. 75 p.

- Speare PJ, Cappel M, Rees M, Brownlie J, Oxley WG (2004) Deeper Water Fish and Benthic Surveys in the Lord Howe Island Marine Park (Commonwealth Waters): February 2004. Produced for the Department of the Environment and Heritage. Australian Institute of Marine Science. 34 p.
- Steinberg CR, Heron SF, Skirving WJ, McLean C, Choukroun SM (2004) Palau Oceanographic Array Data Report, August 2003 – January 2004. Report to The Nature Conservancy. Australian Institute of Marine Science and National Oceanic and Atmospheric Administration NESDIS. 246 p.
- Sweatman H, Abdo D, Burgess S, Cheal A, Coleman G, Delean S, Emslie M, Miller I, Osborne K, Oxley W, Page C, Thompson A (2004) Long-term Monitoring of the Great Barrier Reef. Status Report Number 6. Australian Institute of Marine Science, Townsville.
- Veron JEN (2004) Coral Survey at Selected Sites in Arnhem Land. Report produced for National Oceans Office. Australian Institute of Marine Science. 26 p.
- Wolanski EJ, Chicharo L, Chicharo M, Morais P (2004) An estuarine ecohydrology model: the Guadiana Estuary case (Portugal). UNESCO-ROSTE. 29 p.
- Wolff CWW (2004) Summary of Dictyoceratid Sponge survey of Arnhem Land with notes on other non-Scleratinian fauna. Australian Institute of Marine Science. 4 p.



## 5. Membership of external committees and non-government organisations

### INTERNATIONAL FORUMS

Association of Official Analytical Chemists (AOAC) Presidential Task Force on Marine and Freshwater Toxins

Arafura Timor Seas Expert Forum (ATSEF) Steering Committee

Census of Marine Life Executive Committee

Census of Marine Life Scientific Steering Committee

Coral Reef Degradation in the Indian Ocean (CORDIO) Project Steering Committee

Coral Reef Initiative for South Pacific (CRISP) Senior Scientific Advisor

Great Barrier Reef Research Foundation - International Scientific Advisory Committee (GBRRF – ISAC)

International Atomic Energy Agency (Expert Consultant to United Nations Development Project ‘Transfer of Receptor Binding Assay for Harmful Algal Toxins’)

International Center for Environmental Management of Enclosed Coastal Seas, Japan Scientific & Policy Committee

International Coral Reef Action Network Steering Committee

International Coral Reef Initiative Co-ordination and Planning Committee

International Ocean Institute (Australia) Coordination Centre for Asia Pacific – Board Member

International Society for Reef Studies - Councillor

MARGINS Oceanographic Consortium

National Irish Marine Biotechnology Steering Committee

Palau International Coral Reef Center Scientific Advisory Committee

Stratos/IISD/Swiss Government’s Access and Benefit Sharing Tool Project Advisory Committee

Tropical River-Ocean Processes in the Coastal Settings (TROPICS) - Australian coordinator

UNESCO International Hydrological Program: Estuarine Ecohydrology subproject - Chairman

United Nations-Sigma Xi Science Expert Group

World Bank Coral Reef Restoration and Remediation Working Group

### DOMESTIC FORUMS

AIMS@JCU Board

Antarctic Research Assessment Committee (ARAC) Life Sciences

Arafura Timor Research Facility Board

Australasian Centre of Excellence Regional Users Advisory Panel (UoQ)

Australian Academy of Technological Sciences and Engineering: CAETS 2005 - Organising Committee

Australian Fisheries Management Authority Northern Shark Stock Assessment Group

Australian Government Department of the Environment and Heritage National Shark Recovery Group

'Australian Integrated Ocean Observing System' (AusIOOS) Working Group

Australian Marine Sciences Association (AMSA) National Committee

Australian Marine Sciences Association (AMSA) NT President

Australian National Sportfishing Association (ANSA) Scientific Research Foundation

Australian Ocean Colour Working Group

**Australian Ocean Data Centre Joint Facility**

Australian Research Council Expert Review Committee

Australian Research Council Oz Reader

Cleveland Bay Consortium

Commonwealth Inter-departmental Committee on Access to Genetic Resources

Commonwealth Marine Protected Areas Committee

Coordination Committee on Science and Technology

CRC Reef Board

CRC Reef Scientific Advisory Committee

CRC Reef Task Review Committee

CRC Torres Strait Board

Darwin Harbour Research Advisory Committee

FRDC Prawn Domestication Steering Committee

GBR Seabed Biodiversity Project Steering Group – Chair

GBRMPA Fisheries Research Advisory Committee

GBRMPA Water Quality and Coastal Research Advisory Committee

James Cook University Aquarium Advisory Committee

Joint CRC Reef & Rainforest 'Catchment to Reef Programme' Steering Group

Milner Bay Marine Environment Advisory Group - Chair

Milner Bay Marine Environmental Advisory Group

MPA Peer Review Committee - Chair

Marine and Tropical Sciences Research Facility (MTSRF) Interim Board Member

National Centre for Tropical Wetlands Management

National Facilities Ship Scientific Advisory Committee

National Low Level Nutrient Collaborative Trial Committee

National Oceans Office National Bioregionalisation Working Group

National Oceans Office Northern Planning Advisory Committee - Scientific Member

Natural Resource Management Marine & Coastal Committee

Northern Prawn Fishery Management Advisory Committee (NORMAC) Research and Environment Committee - Chair

Northern Prawn Fishery Management Advisory Committee (NORMAC)

NT Fisheries Research Advisory Board

Oceans Policy Science Advisory Group (OPSAG)

Prime Minister's Science, Engineering and Innovation Council (PMSEIC) Biodiscovery Working Group

QDNRM Burdekin River Water Allocation Management Plan Technical Advisory Panel (TAP)

Queensland Department of Primary Industries and Fisheries HarvestMac

QDPI&F HarvestMac Aquarium fish working group

QDPI&F HarvestMAC Coral fishery working group

QDPI&F HarvestMac Sea cucumber working group

Queensland Department of Primary Industries and Fisheries ReefMac

Reef Water Quality Protection Plan (RWQPP) Steering Committee

Reef Water Quality Protection Plan (RWQPP) Programme Committee

Reef Water Quality Protection Plan (RWQPP) Expert Advisory Panel for Inshore

### Marine Monitoring

Standards Australia Committee EV-008 – Examination of waters

Torres Strait Scientific Advisory Committee

Twin Cities Fish Stocking Society – Scientific Advisor

WA Physical Oceanographic Coordinating Group (WAPOCG)

Western Australian Marine Science Institution (WAMSI) Board Member

Western Rock Lobster Fishery Effects of Fishing on the Ecosystem – Scientific Reference Group



# Glossary

## ACRONYMS AND ABBREVIATIONS

ACTFR	Australian Center for Tropical Freshwater Research
AFMA	Australian Fisheries Management Authority
AIMS	Australian Institute of Marine Science
AIMS Act	Australian Institute of Marine Science Act 1972
AMPTO	Association of Marine Park Tourism Operators
ANU	Australian National University
ANZECC	Australian and New Zealand Environment and Conservation Council
APEC	Asia-Pacific Economic Cooperation
APRA	Australian Prudential Regulation Authority
ATRF	Arafura-Timor Research Facility
CAC Act	Commonwealth Authorities and Companies Act 1997
CALM	Western Australian Department of Conservation and Land Management
CBPL	Cleveland Biosensors Pty Ltd
CDU	Charles Darwin University
COTS	Crown-of-thorns Starfish
CRC	Cooperative Research Centre
CRC Rainforest	CRC for Tropical Rainforest Ecology and Management
CRC Reef	CRC for the Great Barrier Reef World Heritage Area
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
DBIRD	Department of Business, Industry and Resource Development (Northern Territory)
DEH	Australian Government Department of the Environment and Heritage
DIPE	Northern Territory Department of Infrastructure, Planning and Environment
DSDTI	Queensland Department of State Development, Trade and Innovation
EAP	Employee Assistance Programme
EASNQ	Employee Assistance Services of North Queensland
EEO	Equal Employment Opportunity
EMP	Environment Management Plan
FOI	Freedom of Information
FRDC	Fisheries Research and Development Corporation
GBR	Great Barrier Reef
GBRMP	Great Barrier Reef Marine Park
GBRMPA	Great Barrier Reef Marine Park Authority



GBRRF	Great Barrier Reef Research Foundation
GBRWhA	Great Barrier Reef World Heritage Area
GCRMN	Global Coral Reef Monitoring Network
GIWA	Global International Waters Assessment
ILC	Indigenous Land Council
IMPAC	International Marine Project Activities Centre
IP	Intellectual property
ISRS	International Society for Reef Studies
JCU	James Cook University
LC-MS-SPE-NMR	Liquid chromatograph-mass spectrometer-solid phase elution-nuclear magnetic resonance spectrometer
MPA	Marine Protected Area
NCI	United States National Cancer Institute
NGO	Non-Governmental Organisation
NIWA	National Institute of Water and Atmospheric Research (New Zealand)
NLC	Northern Lands Council
NOAA	United States National Oceanic and Atmospheric Administration
NRP	National Research Priorities
OGTR	Office of the Gene Technology Regulator
OH&S	Occupational health and safety
OH&S Act	Occupational Health and Safety (Commonwealth Employment) Act 1991
PAHs	Polycyclic aromatic hydrocarbons
PPDK	Pyruvate Pi dikinase (an enzyme found in weeds)
QDNRM	Queensland Department of Natural Resources and Mines
QDPI&F	Queensland Department of Primary Industries and Fisheries
QEPA	Queensland Environmental Protection Agency
QSI	Queensland Seafood Industry Association
R&D	Research and development
SPMDs	Semi-permeable membrane devices
TSRA	Torres Strait Regional Authority
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UQ	University of Queensland
UV	Ultra-violet
UWA	University of Western Australia
WA Fisheries	Department of Fisheries, Western Australia
WTWhA	Wet Tropics World Heritage Area

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