



Australian Government



**AUSTRALIAN INSTITUTE
OF MARINE SCIENCE**

08-09
ANNUAL REPORT

AIMS: Australia's tropical marine research agency.

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 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

This report, along with a range of other information about the Institute, is available online at www.aims.gov.au

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ISSN 1037-3314

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Australian Government



AUSTRALIAN INSTITUTE
OF MARINE SCIENCE

TOWNSVILLE

DARWIN

PERTH

11 September 2009

Senator The Hon Kim Carr
Minister for Innovation, Industry, Science and Research
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 37th Annual Report for the year ended 30 June 2009. 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 2008-2009 financial year.

The report has been prepared in accordance with the *Commonwealth Authorities and Companies Orders (Financial Statements for Periods Ending on or after 1 July 2008)* made by the Finance Minister under the authority of section 48 of the CAC Act. The Council endorsed the content of the AIMS Annual Report by a resolution out of session on 11 September 2009.

Yours sincerely

Dr Ian Gould
Chairman
Australian Institute of Marine Science

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A SNAPSHOT OF THE YEAR

- ◆ AIMS received \$55 million in new infrastructure funding in the May 2009 Federal Budget. The funding will be used for a range of initiatives including building the Australian Tropical Oceans Simulator at the Institute's Townsville headquarters, a high tech facility designed to enable scientists to examine the effects of change on marine ecosystems.
- ◆ In November 2008, AIMS released the first annual *AIMS Index of Marine Industries*, which has quantified the value of this sector to Australia's economy at \$38 billion in 2006-07.
- ◆ In March 2009 AIMS signed a Memorandum of Understanding with the University of Western Australia to establish a joint research fund.
- ◆ AIMS increased its staffing levels to nearly 200 personnel, with an especially large increase in staff in AIMS Western Australia.
- ◆ AIMS completed the first full year of the pioneering \$30 million Scott Reef Research Project, funded by Woodside Energy, designed to provide baseline environmental information about an important reef system off the Western Australian coast.
- ◆ AIMS was centrally involved in a workshop held in Townsville in October 2008 in which the Commonwealth Government brought together representatives of the Coral Triangle region to Australia's north with a range of Australian experts to discuss scientific strategies for protecting this vitally important region.
- ◆ AIMS successfully led CReefs expeditions to Ningaloo Reef in Western Australia and Lizard and Heron Islands in the Great Barrier Reef, turning up scores of species new to science.
- ◆ AIMS heralded a range of landmark new books by AIMS scientists and associates, including one on coral bleaching and another on mangroves.
- ◆ The Institute set a new direction for AIMS Northern Territory, following the key appointment of a new science leader based in Darwin, Professor David Parry. AIMS will now concentrate on the impacts of coastal development, especially as Darwin Harbour is likely to be developed as a hub for Liquified Natural Gas processing.
- ◆ A team of AIMS scientists published data on a decline in growth since 1990 of large reef-building *Porites* corals on the Great Barrier Reef. The scientists believe that evidence points to the decline being caused by a combination of rising sea surface temperatures and ocean acidification.
- ◆ After Tropical Cyclone Hamish cut a swathe along a large part of the Great Barrier Reef in March 2009, AIMS deployed teams of scientists to make a detailed assessment of the damage.
- ◆ In October 2008 AIMS opened the Centre for Marine Microbiology and Genetics Research, a new facility designed to take AIMS into international prominence in the burgeoning and vital fields of marine microbes and symbiosis.
- ◆ AIMS research further demonstrated the effectiveness of expanded no-take zones on the Great Barrier Reef, showing that these areas are less prone to infestation by the devastating crown-of-thorns starfish.
- ◆ A paper by an AIMS scientist documented a 200km shift southwards of climate zones along the northeast coast of Australia and an expansion in the area that can be designated "the tropics".



Polychaete Hesionidae found at Lizard Island during a CReefs expedition. Image: Gary Cranitch © Queensland Museum.

ABOUT AIMS



Our mission: "To generate and transfer knowledge to support the sustainable use and protection of the marine environment through innovative, world class scientific and technological research."

AIMS is a Commonwealth statutory authority established by the *Australian Institute of Marine Science Act 1972*. To ensure that it is meeting the challenges facing marine ecosystems and the requirements of stakeholders, AIMS surveys and documents marine life from microbes to whole-of-ecosystems, and the processes that sustain them; monitors changes and identifies trends in the marine environment; and develops molecular tools and ocean technologies.

Fisheries, offshore oil and gas, mining, reef tourism and aquaculture industries have all benefited from AIMS research that is geared towards the protection and sustainable development of marine resources. These benefits will underwrite protection of Australia's marine biodiversity and new areas of the economy into the future.

OUR PEOPLE

AIMS employs nearly 200 science and support staff to deliver 12 Key Result Areas (KRAs). Many of our scientists are world authorities in their field and have achieved international acclaim for their research. Support staff provide specialised skills in data management, information technology, engineering, field operations, information services, science communication and corporate services. A variety of AIMS services, such as vessel crewing, catering, cleaning and maintenance, are carried out by about 30 contractors. AIMS maintains a strong educational program, particularly through the AIMS@JCU joint venture, and co-funded postdoctoral positions at three universities.

OUR RESEARCH

The Institute's expertise in tropical marine ecosystems, combined with a multidisciplinary capability, makes possible the full spectrum of scientific investigation from the seafloor to the lab bench. AIMS works collaboratively with national and international organisations and researchers to improve understanding of complex marine ecosystems. The Institute carries out internationally renowned research in marine biodiversity, impacts and adaptation to

climate change, water quality and ecosystem health, tropical aquaculture and the emerging area of marine microbiology.

OUR LOCATIONS

AIMS' headquarters near Townsville is adjacent to the centre of the Great Barrier Reef and surrounded by a 207 hectare national park and marine reserve. It is free from development, biosecure and has access to clean seawater and a protected harbour. Using an injection of Australian Government infrastructure funding, the Institute is greatly expanding its research facilities at the Townsville site with the construction of the Australian Tropical Oceans Simulator. This new building will provide unprecedented ability to extend global understanding of the impacts of climate change and ocean acidification. New vessel berthing facilities will also be built in Townsville. AIMS' NT research is based at the Arafura Timor Research Facility (ATRF) adjacent to the campuses of Charles Darwin University and the Australian National University. Darwin was chosen as the site for this Major National Research Facility because of its national and international scientific and commercial advantages for marine and coastal research. AIMS' Northern Territory research facilities are being expanded to enable more joint research with its Darwin collaborators. AIMS Western Australia is co-located with the University of Western Australia's new Oceans Institute at the University's Perth campus. AIMS has established research partnerships with a range of WA research institutions including the Western Australian Marine Science Institution (WAMSI).

OUR FACILITIES

AIMS' facilities include:

- ◆ engineering workshops for the development of instrumentation required for research activities;
- ◆ modern chemistry, biology, microbiology, oceanography and remote sensing laboratories;
- ◆ a range of analytical facilities including a sophisticated biomolecular analysis facility;
- ◆ the new high-tech Great Barrier Reef Ocean Observing System and other observing infrastructure at Scott Reef and Ningaloo Reef in Western Australia;
- ◆ the AIMS Data Centre, providing online interactive visualisation and access to high value research data;
- ◆ seawater aquaria and controlled environment rooms;
- ◆ a microbiological and genetic research facility;
- ◆ weather stations deployed at various marine locations;
- ◆ an extensive library containing current and historical marine science information;
- ◆ a bioresource library;
- ◆ an aquaculture centre;
- ◆ an X-band satellite receiver;
- ◆ the AIMS Coral Core Archive.

The AIMS research fleet provides access to all of Australia's tropical marine environments. Two large purpose-built ships, the RV *Cape Ferguson* and the RV *Solander*, and a number of smaller vessels, take researchers to the diverse habitats that make up Australia's tropical marine environment. AIMS' major vessels are equipped with a wide range of facilities for long research trips, such as:

- ◆ on-board compressors to provide, for example, NITROX capability;
- ◆ A-frame, hydrographic and CTD winches;
- ◆ on-board wet and dry laboratories;
- ◆ large deck spaces;
- ◆ inflatable tenders;
- ◆ high tech navigation and satellite communications;
- ◆ flow-through aquaria;
- ◆ computing facilities.

During the reporting period, AIMS conducted 149 field trips.

Vessel statistics:

| | |
|---------------|--|
| Solander | 21 research trips; 246 research days; steamed approx 21,793 NM |
| Cape Ferguson | 24 research trips; 259 research days; steamed approx 15,413 NM |
| Apollo | conducted 22 research trips totalling 28 days |
| Aquila | conducted 12 research trips totalling 53 days |

Diving: 4,254 dives



New octopus species found at Lizard Island during a CReefs expedition. Image: Julian Finn © Museum Victoria.

HIGHLIGHTS

Growth of reef-building GBR corals shown to have dropped



A bleached massive Porites coral on the Great Barrier Reef.

The biggest and most robust corals on the Great Barrier Reef (GBR) have slowed their growth by more than 14 per cent since 1990, according to an AIMS study. Evidence is strong that the decline has been caused by a synergistic combination of rising sea surface temperatures and ocean acidification.

The study was based on statistical analyses of annual growth bands from 328 *Porites* corals from 69 reefs across the length and breadth of the GBR, extending back in time up to 400 years. The data are from AIMS' Coral Core Archive (ACCA), the most extensive such collection in the world.

Reef corals create their hard skeletons from materials dissolved in seawater. When large amounts of atmospheric carbon dioxide enter seawater, the resulting chemical changes effectively reduce the ability of marine organisms to form skeletons.

Up to the tipping point in 1990, there were modest fluctuations in calcification, with an annual decline rate recorded that year of 0.3 per cent. However, by 2005 growth was declining by 1.5 per cent per year. On current trends, the corals would stop growing altogether by 2050.

The data suggest that this severe and sudden decline in *Porites* growth is unprecedented in at least 400 years. The causes remain unknown, but the study suggests that the combination of increasing temperature stress and ocean acidification may be diminishing the ability of GBR corals to deposit calcium carbonate.

Previous laboratory experiments and models had predicted that coral growth would decline in response to acidification, but this study has shown for the first time that corals are already affected in their natural environment throughout the GBR.

More carbon dioxide in the oceans causes the oceans' alkaline/acid balance (their "pH") to shift towards acidic. Oceanic pH has already dropped by 0.1 and could decrease by 0.4 by the end of this century. This is due to the oceans absorbing about a third of the extra carbon dioxide (the main greenhouse gas) that humans have put into the atmosphere.

If projections of a 0.4 decline in pH are correct, this would be well outside the realms of anything organisms have experienced over hundreds of thousands of years.

HIGHLIGHTS

New WA Marine Bioresources Library to aid medical research



Coral colonies at Scott Reef, Western Australia.

A huge step forward in understanding the nature of Western Australian marine biodiversity and facilitating sustainable use of it was marked in March 2009 with the opening of the state's first Marine Bioresources Library, known as WAMBL.

WAMBL has been established by AIMS and the WA Museum with start up funding from the Western Australian Marine Science Institute (WAMSI). The new library will facilitate access to WA's marine biodiversity for biodiscovery research that could lead to new medicines from the sea.

It also has heritage significance in that it represents a repository of marine genetic diversity that will be used on Census of Marine Life and Ocean Genome Legacy research programs.

WAMBL is one of only three biodiversity libraries in Australia, with the other two based in Queensland (at AIMS' Townsville headquarters and Griffith University) and is the first in Australia to be open for state and national access. It will enable timely and co-ordinated access to samples with full legal compliance. AIMS' Bioresources procedures, database and policies were instrumental in establishing WAMBL.

WAMBL has been populated by AIMS bioresources samples previously collected from the WA region (approximately 1,000 specimens initially), as well as samples from other more recent AIMS collaborative projects in WAMSI. The first biodiscovery project using WAMBL resources is a screening program based at the Western Australian Medical Institute of Research, focusing on breast cancer.

The Library contains frozen samples taken from sponges and other WA marine species and is being professionally curated by WA Museum experts.

Extracts will be available for use by state, national and international organisations to provide new research opportunities for industry. Early research has shown that marine organisms from WA have a high incidence of medicinally relevant bioactive compounds.

The establishment of this Library will assist in:

- ◆ Storage of marine biodiversity extracts;
- ◆ Creating a repository of marine genetic diversity;
- ◆ Creating an inventory of marine frozen samples for the library;
- ◆ Creating a georeferenced biodiversity database;
- ◆ Delivering samples to two WAMSI screening partners;
- ◆ Providing a central point for marine specimens curated elsewhere;



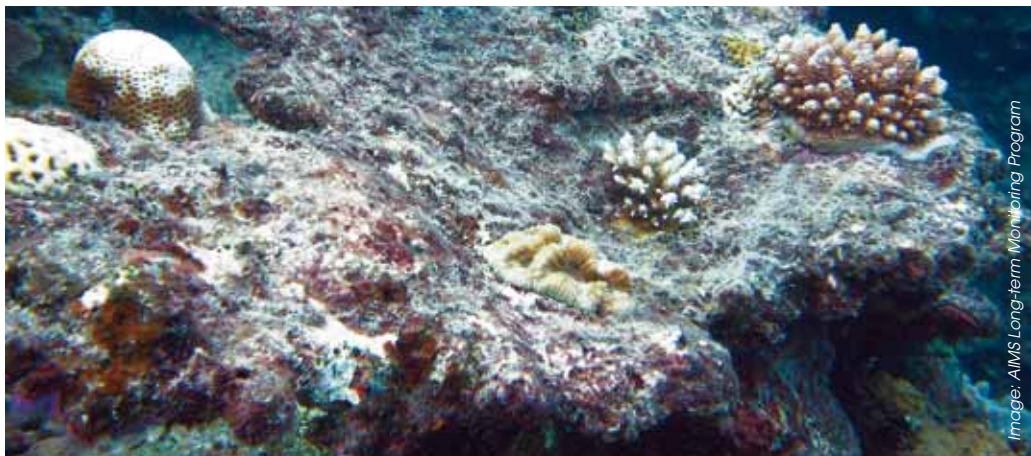
Image: Andrew Heyward.

Ningaloo Reef specimens.

- ◆ Collating AIMS and WAMSI specimens into WA Museum's repository;
- ◆ Identifying valuable compounds from marine biodiversity;
- ◆ Enhancing marine, microbial, chemical and biomedical sciences;
- ◆ Using marine samples in screening programs targeting breast cancer;
- ◆ Producing marine natural products, including anti-cancer and anti-bacterial agents;
- ◆ Reviewing industry interests for economically sustainable generation of biomaterials and by-products derived from marine organisms; and
- ◆ Encouraging the introduction of WA biotechnology legislation to improve biodiscovery research investment and exploration prospects.

HIGHLIGHTS

Are coral reefs of the world being overgrown by seaweeds?



New corals growing on an old Acropora skeleton.

“Phase shifts” in natural ecosystems mean the replacement of one stable community of animals and plants by an alternative stable community. In the case of coral reefs, anthropogenic disturbance can lead to the replacement of corals by seaweeds. Once seaweeds become abundant they persist because they hinder coral recovery.

There were some spectacular examples from the Caribbean in the 1980s, where a combination of damage by hurricanes and low numbers of weed-eating fishes (because of over-fishing) led to reefs being covered by large seaweeds. Once seaweeds become established they can block the re-establishment of corals by shading and brushing over small coral colonies and slowing their growth. But is this happening world-wide?

A recent review of information from reefs in many parts of the world by AIMS scientist Dr Hugh Sweatman, along with Dr John Bruno, Dr Elizabeth Selig and Virginia Schutte from the University of North Carolina at Chapel Hill and Florida-based marine ecologist Dr William Precht, has found that only four per cent of reefs are dominated by seaweeds in the sense of having more than half their surface covered with seaweeds.

According to the scientists, it was certainly the case that coral had decreased worldwide in recent years, but in many locations seaweed had not increased correspondingly.

Even taking the conservative figure of 25 per cent of reef surface covered with macroalgae, less than 20 per cent of reefs worldwide are dominated by seaweeds and the majority of these were in the Caribbean. For the Indo-Pacific region, including the Great Barrier Reef, the figure is just one per cent.

The study also found that, worldwide, coral cover has decreased in recent years but macroalgae have not increased. This suggests that the primary problem is coral decline and its causes; establishment of macroalgae is an important but secondary issue.

The study is the first global-scale analysis of thousands of surveys of individual reefs, involving more than 3,500 examinations of about 1,800 reefs made between 1996 and 2006.

HIGHLIGHTS

Sponge farming at Masig Island, Torres Strait



Growing sponges at Masig Island.

The establishment of Australia's first sponge farm at Masig Island in Torres Strait highlights the impact and uptake of AIMS' sponge farming research.

The project has been developed with substantial State and Commonwealth government investment. This project was one of three Queensland innovative initiatives highlighted by Premier Anna Bligh at the launch of Q-Tropics – Queensland Tropical Expertise Strategy.

Sponge aquaculture will supply an international bath sponge industry worth \$40 million per year. This highly traditional industry in Europe and North America in particular is suffering from a lack of supply of commercial bath sponges as traditional fisheries decline.

Farming sponges is an ideal industry for remote communities as it requires relatively low technological infrastructure and no refrigeration, the sponges store and handle well and are light weight and therefore inexpensive to transport to market. It also provides opportunity for significant value adding.

A second farming project is also poised for development, pending environmental regulatory assessment, at the Palm Islands off the north Queensland coast. This project is initially intended to provide stepping-stone opportunities in training and education for members of the local Palm Island community, with three trainees already completing their Certificate III in Aquaculture, which included commercial diver training.

The project has also supported completion of three PhDs, an MSc and two Honours degrees, together with a number of associated publications.

Once operational, these sponge farms are collectively expected to employ over 40 indigenous people, with more expected as this new industry grows in northern Australia.

HIGHLIGHTS

The forgotten ecosystems vital to the carbon cycle



Image: Tim Simmonds

Mangroves at Hinchinbrook Channel.

Mangroves are just as productive and extensive as rainforests and are a vital part of the Earth's carbon cycle, but they are often the forgotten ecosystem, not valued and so not properly looked after.

A new book by AIMS researcher Dr Daniel Alongi, *The Energetics of Mangrove Forests* (published by Springer), is a comprehensive examination and unique synthesis of these crucial biological systems that inhabit the harsh fringe areas between land and sea and exhibit characteristics of both land-based and marine ecosystems. It also provides a status report on how mangroves are faring in a time of rising and shifting populations and changing climate.

An analysis of carbon flows through mangroves showed that these forests are just as productive as rainforests and also process a disproportionate amount of carbon. Although they only cover 0.1 per cent of the Earth's surface, they process five per cent of carbon in the atmosphere.

However, in many parts of the world, mangrove destruction continues unabated in this century, at an annual global rate of one to two per cent. Since mangroves occur mostly in tropical regions, which are inhabited largely by poor people, mangrove ecosystems face constant threats. Losing a resource before its importance is fully established is a concern for coastal sustainability. For example, at present very little is known about the link between mangroves and fisheries, although it is clear that there is a link. Mangroves have a number of known benefits as well, such as protecting coastlines from erosion and, in some cases, weakening the destructive energy of waves, including tsunamis.

The research outlined in Dr Alongi's book will inform decision making in countries that have mangrove ecosystems, leading to preservation of remaining mangrove forests and reforestation in places where mangroves have been cleared.

HIGHLIGHTS

Forams as reef health indicators



Image: Sven Uthicke.

A specimen of diatom-bearing foram (Calcarina sp.) in its natural habitat.

Current discussions about coral reef decline focus mainly on global disturbances such as increasing sea temperatures and ocean acidification. However, the impacts of local and regional stressors such as land runoff continue to affect reef health, and management of local stressors will improve reef resilience.

Research by AIMS ecologists has assessed whether foraminifera (forams) can be used as biological indicators for changes in water and sediment quality on inshore reefs of the Great Barrier Reef. Forams are single-celled marine organisms with calcareous shells full of tiny holes through which slender filaments project. Biological indicators have clear advantages over directly measuring water quality to assess the effects of changes in water quality on reef health.

Foram communities differed between the four geographic regions studied in the GBR, from Cairns to Rockhampton. Within these regions, environmental variables such as sediment grain size and organic carbon and nitrogen content, and water turbidity and particulate matter, explained most of these differences.

The organisms mainly separated into assemblages dominated by species with no symbionts (heterotrophic), mainly found in sediments with high organic content and in low light availability, and assemblages of species with algal symbionts. The latter occurred mostly in sediments with low organic content and high light availability.

This pattern is also reflected in the FORAM index (a Caribbean coral reef health indicator), which is based on the ratio of heterotrophic to symbiont-bearing species. This work showed that foram composition is a good bio-indicator for environmental conditions on coral reefs, specifically those related to inputs from land runoff.

Assessments of foram composition are now part of the Reef Rescue Marine Monitoring Program, to measure long-term improvement in the condition of water quality in the inshore GBR lagoon and marine ecosystem health (inshore coral reefs and intertidal seagrasses) with the adoption of improved land management practices in the Great Barrier Reef catchment.

HIGHLIGHTS

“Digital skin” already showing its value



Image: Scott Bainbridge.

A GBROOS sensor deployed near Heron Island.

The new Great Barrier Reef Ocean Observing System (GBROOS) is midway through its roll-out but has already begun to show how important it is going to be in the future in monitoring conditions on the Great Barrier Reef.

This ambitious program to cover the Reef with a variety of high-tech sensors was first announced by the Minister for Innovation, Industry, Science and Research Senator Kim Carr in early 2008 and since then the huge logistical task of deploying the sensors and activating the network has been underway in earnest. GBROOS is one of five nodes of the Integrated Marine Observing System (IMOS), a national project designed to provide comprehensive monitoring of the oceans around Australia.

When Category 5 Tropical Cyclone Hamish roared down the Reef in March 2009, the GBROOS sensors picked up data from a number of locations and relayed it back to AIMS headquarters via the Telstra 3G network. Reef scientists were able to witness data on the huge physical forces of the cyclone from multiple observation points as it was unfolding.

The combination of systems, from remote sensing imagery, an array of deep-water moorings through to shallow reef sensors, allows water to be tracked from the deep oceans onto and into the reefs themselves, showing how the ocean processes influence reefs directly. The system also tracks the ebb and flow of the major currents such as the East Australian Current.

GBROOS includes the world's first remote coral reef wireless sensor network and its sensors have so far been set up at Heron and One Tree Islands in the southern GBR. Also, underway sensors have been fixed to RV *Cape Ferguson* and to various GBR commercial ferries as well, adding greatly to the amount of data able to be collected. In addition, AIMS' RV *Solander*, currently deployed in Western Australian waters, has had an underway sensor fitted.

The entire GBROOS network should be in place, with the addition of central and northern sectors of the GBR, by the middle of 2010. Data from the existing sensors is publicly available via the website <http://data.aims.gov.au/gbroos>.

HIGHLIGHTS

Assessing the damage from Tropical Cyclone Hamish



After Cyclone Hamish.

In March 2009, Category 5 Tropical Cyclone Hamish passed directly over the southern central section of the Great Barrier Reef in a rare alongshore path with potential to damage a large portion of reefs in the Marine Park.

Hamish formed in the Coral Sea about 300km offshore from the Princess Charlotte Bay area in the northern Great Barrier Reef on 5 March 2009. For three days it travelled parallel to the GBR before it crossed onto the reef near the Whitsundays as a Category 5 cyclone.

Over the next three days it moved through the middle of the western, mid and eastern Swains reefs with wind speeds up to 280km per hour.

Soon after the passage of the cyclone, AIMS deployed two teams to assess the damage on 26 reefs, at a total of 61 sites. The teams found that most reef damage was sustained within 30km of the cyclone eye track. Within this area, damage was often severe on several sides of the reef. However, even on severely damaged reefs, pockets of untouched reef often remained. Scouring (tissue stripped off coral), coral breakage and macro-algal blooms were the most common type of impact.

Although many cyclones have had an impact on the GBR over the years, this one was notable for the size of the area that was affected (over 500km or 25 per cent of the Great Barrier Reef).

One observation reported by the first voyages to reach the affected region was the presence of spectacular but ephemeral blooms of filamentous algae, indicating massive enrichment of the ecosystem. The source of these additional nutrients has now become an interesting research question.

HIGHLIGHTS

Book shows how coral bleaching is shaping the future of coral reefs



Bleached coral.

The most comprehensive survey to date of the coral bleaching phenomenon and its effect on the future of the world's coral reefs has been published in a book edited by two senior AIMS scientists. Dr Madeleine van Oppen and Dr Janice Lough have brought together years of research and broad current thinking into their new book *Coral Bleaching: Patterns, Processes, Causes and Consequences*, published by Springer.

This book fills a niche by bringing together available scientific information on coral bleaching at different space and time scales from the deep geological record through to future projections.

Mass coral bleaching is caused by higher sea surface temperatures disrupting the symbiotic relationship between the coral animal and the single-celled photosynthetic algae called zooxanthellae that live in the coral's tissues. These algae give the coral its colours and supply it with food. When the seas warm, the zooxanthellae are lost and the coral appears white, possibly leading to death.

Bleaching on a small scale is not new, since it can be caused by a variety of localised stresses. What is new is the large-scale, whole-reef bleaching seen episodically since 1998 that has been caused by recent warming of the oceans.

A significant amount of marine science research has been devoted to this phenomenon in the past decade around the world, including at AIMS.

By focusing on the many facets of the coral bleaching phenomenon, the most immediate consequence of a changing climate for coral reefs, the new book builds upon recent research that highlights the vulnerability of coral reefs in a changing climate and provides a complete guide to current thinking on coral bleaching.

HIGHLIGHTS

New AIMS research facilities will show that life is a symbiosis



Microscopic image of a Montipora coral embryo, showing the different fluorescence signals of the host coral tissue (green-blue) with that of a symbiotic algae (intense red).

AIMS is embarking on a scientific quest to answer fundamental questions about the unseen world of marine microbes, focused on the symbiotic relationships between the smallest creatures known and their hosts.

The new AIMS Centre for Marine Microbiology and Genetics Research (CMMG), opened in October 2008 by Desley Boyle MP, then Queensland Minister for Tourism, Regional Development and Industry, is designed to make the Institute a major international player in the burgeoning field of marine microbiology.

Support for the CMMG has been provided by the Queensland Government under its Smart State Research Facilities fund and by the Commonwealth Government.

Microbes, in their many forms including bacteria, algae and viruses, live in mutually beneficial or antagonistic relationships with each other and with bigger plants and animals, and this drives many of the vital systems of life.

These microscopic creatures present a new frontier as insights into the importance of microbes to all forms of life on Earth emerge. There is strong emerging evidence that the evolutionary process itself is dependent upon symbiotic microbial activity; that life is a symbiosis. Indeed, it is now thought that about 90 per cent of the human genome is made up of genes derived originally from viruses.

AIMS scientists are especially looking at how marine microbes function with each other and in relation to other creatures. This is expected to provide a more detailed picture than ever before of how marine systems operate at their most basic level.

There are more than a billion micro-organisms in each litre of seawater, and microbes dominate the abundance, diversity and metabolic activity of the ocean. They make up 98 per cent of life in the world's oceans, supply more than half the world's oxygen, are the major processors of the world's greenhouse gases and have the potential to mitigate the effects of climate change.

Symbiosis is one of the major themes of the new work being done at the CMMG. This includes how the various relationships that form between microbes influence, for example, the health of corals and reef ecosystems.

Little is known about the fundamental processes of microbial symbiosis in the tropical marine world, and the new AIMS CMMG facility is developing a robust research program designed to fill the gaps. Marine microbial ecology is just starting to emerge internationally as the next big thing in marine science. AIMS has decided to invest in this strategically important area to deepen our understanding of how the marine environment works.

HIGHLIGHTS

AIMS sponge research turning up remarkable insights



Image: Carsten Wolff.

Marine sponges.

Sponges are primitive sedentary animals that lack nervous systems but nonetheless play significant roles in marine ecosystems. Sponges filter large volumes of seawater and transfer vast amounts of energy and nutrients from oceanic food sources to benthic ecosystems including coral reefs.

AIMS sponge ecologist Dr Nicole Webster has published work this year showing that sea sponges, which host a complex community of microbes in a mutually-beneficial relationship, are at risk from higher sea surface temperatures because the symbiotic relationship between the sponge and its microbes breaks down at 33 degrees Celsius.

This is identical to the temperature threshold at which corals experience bleaching, which is also a breakdown in the symbiotic relationship between the host and its microbes. Elevated sea temperatures expected as climate change progresses would threaten the survival of sponges.

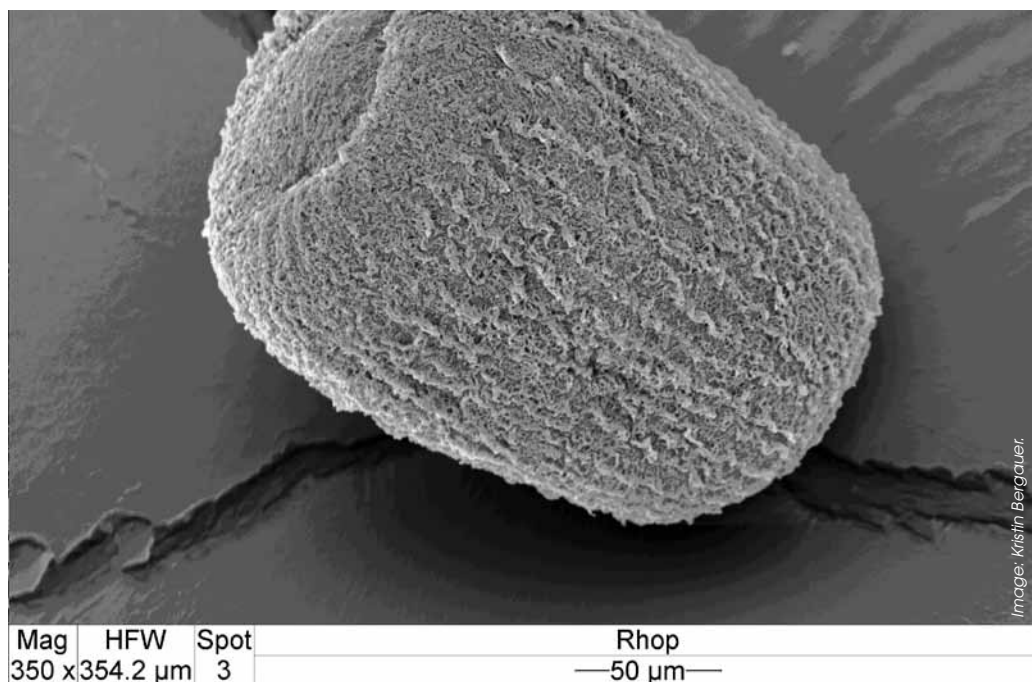
In some sponges, up to 40 per cent of their body weight is made up of microscopic symbiotic bacteria, contributing a range of benefits including chemical defence systems and the processing of nutrition and waste.

The delicate equilibrium of this relationship appears to be at risk as temperatures rise. In a series of experiments in which Dr Webster and her colleagues exposed a common GBR sponge (*Rhopaloeides odorabile*) to water temperatures ranging from 27 degrees to 33 degrees, the clear line of demarcation between a continued healthy symbiotic microbial community in the sponge and a switch to harmful microbes that cause disease consistently emerged at 33 degrees.

Dr Webster has also completed the first DNA sequencing study of the microbial symbionts of sponges, funded by the International Census of Marine Microbes. The work has revealed exceptional diversity and the modes of transmission for bacterial sponge symbionts.

Another AIMS sponge ecologist, Dr Steve Whalan, with colleagues from AIMS and James Cook University via the AIMS@JCU Joint Venture, has published a paper showing that sponge youngsters hold the key to survival of the mature organism. It is only in the larval phase that sponges are mobile and they make the most of that short-lived capacity, carrying out tasks of surprising sophistication.

For a brief time also they can withstand higher temperatures than older sponges and this has both benefits and drawbacks for sponges, which only have a short time to make the



Scanning Electron Microscope image of a larva of *Rhopaloeides odorabile*.

transition from larvae to the next stages of growth, at which time their tolerance for high temperatures drops substantially.

Dr Whalan and his colleagues also studied *R. odorabile*, investigating how larvae rise through the water column in response to light, dwell at the surface of the sea briefly, then fall back down to a favoured settlement point where they start to grow.

For a creature without a nervous system, they are remarkably responsive to light and even seem to have a “memory” of light that can stay with them after the light has gone.

Larvae have a brief period after they are released from the mother sponge when they have some limited purposeful mobility and can use a rotational “corkscrew” action to propel themselves during a 24 hour period of intense activity. After propelling themselves upwards, they remain at the surface for around 18 hours before sinking to the bottom. They soon lose this swimming ability, but it is essential for getting them where they need to be near the surface of the water. Exactly why they need to go to the surface remains unclear.

The scientists further found that sponges were more likely to settle on areas exposed to light. In fact, the sponges would always settle on a light-exposed surface rather than shaded crevices that appeared to be more favourable for survival.

HIGHLIGHTS

AIMS surveys deep-water habitats with Geoscience Australia



Towed video equipment being prepared for deployment.

AIMS and Geoscience Australia (GA) have signed a Memorandum of Understanding committing to collaborative voyages of discovery using GA's new multi-beam sonar swathe mapper and AIMS' RV *Solander*. In September 2008, the two agencies undertook a major survey of the Carnarvon Shelf, particularly mapping deep-water habitats adjacent to Ningaloo Reef.

The vessel proved a highly suitable platform for shallow-water mapping and seabed sampling, and the research voyage produced an important new dataset for the area.

About 1,000 square kilometres of the Carnarvon Shelf was mapped using the GA equipment. Towed underwater video, still photographs, and seabed sediment samples were collected at 120 sample stations. Acoustic sediment profiles were collected across the shelf and upper slope and current-meter data was collected on the inner and middle shelf.

Initial collections of sponges and other marine creatures are being processed, with the potential that many of the species will be found to be new to Western Australia or new to science.

The research results are being made available to managers of the Western Australian and Commonwealth Marine Parks to better identify the distribution of marine habitats in this unique area of high biodiversity in support of marine conservation objectives.

HIGHLIGHTS

Coral Triangle Initiative workshop in Townsville



Fishing in the Coral Triangle.

Coral reef scientists and policy makers from the world's most prominent coral reef nations met in Townsville in November 2008 to develop action plans to rescue the world's richest centre of marine biodiversity from decline.

Human pressures on the Coral Triangle have raised grave concerns about the future of its fish, corals and other sea life. Indonesian President Susilo Bambang Yudhoyono called for joint action by six governments, scientists, agencies and environmental non-government organisations of the region and this led to the establishment of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI), the largest reef conservation program ever undertaken. Marine scientists from AIMS and the ARC Centre of Excellence for Coral Reef Studies at James Cook University are assisting the CTI.

The Coral Triangle spans Indonesia, Malaysia, the Philippines, Papua New Guinea, Timor Leste and the Solomon Islands. Spread over 5.7 million km², the region has the highest diversity of marine life of any area on Earth. It contains three-quarters of the world's known coral species, a third of the world's coral reefs, more than 3,000 species of fish and the world's richest mangrove forests. More than 120 million people depend directly on these resources.

These resources are under threat from a combination of over-fishing (including illegal fishing), coral bleaching and ocean acidification, pollution and sedimentation due to coastal development. Better collaboration between Coral Triangle experts and Australian experts may well be fundamental to ensuring the knowledge base is in place to prevent an environmental crisis to our north.

AIMS scientist Dr Janice Lough was invited to contribute a section on Climate Change and the Coral Triangle to the Coral Triangle Study Report co-ordinated by WWF Australia and the University of Queensland, in preparation for the May 2009 meeting at the World Oceans Conference in Manado, Indonesia.

AIMS CEO Ian Poiner, with AIMS scientists Dan Alongi and Hugh Sweatman and AIMS associate Terry Done attended the Manado conference. Dr Done was a keynote speaker. Dr Sweatman also visited Kota Kinabalu to give a presentation to the Malaysian Government and to WWF and some other NGOs about AIMS' Long-term Monitoring Program and talk about the scope for a local reef monitoring initiative under the CTI capacity building banner. Dr Alongi held a workshop in Timor Leste to discuss CTI and possible collaborations between the Timorese, AIMS and Indonesians.

HIGHLIGHTS

GBR protected from crown-of-thorns attacks by no-take zones



Image: AIMS Long-term Monitoring Program

Crown-of-thorns starfish eating corals on Keeper Reef.

Reefs where fishing is not allowed are much less prone to infestation by the devastating crown-of-thorns starfish (COTS), according to a new analysis of AIMS' long-term surveys of the Great Barrier Reef.

The starfish is a major management problem on coral reefs from Central America to Kenya and the Red Sea. They eat coral voraciously and wipe out nearly all coral on the reefs they infest. In the past 40 years they have caused much more damage to GBR reefs than have storms or coral bleaching.

Waves of outbreaks last about 15 years, beginning in the northern reaches of the GBR and then moving southward through the central areas.

AIMS scientist Dr Hugh Sweatman predicts that any future waves of COTS outbreaks will not be as destructive as the three waves that have affected the GBR since 1960, because the area of no-take zones on the GBR was increased from 4.5 per cent of the Reef to 33 per cent in 2004.

No-take zones, regulated by the Great Barrier Reef Marine Park Authority, are designated areas known as "green zones" where no fishing is allowed.

By comparing the frequency of starfish outbreaks on no-take reefs and on reefs where fishing was allowed, a clear pattern has emerged. The relative frequency of outbreaks on reefs that were open to fishing was 3.75 times higher than that on no-take reefs in the mid-shelf region of the GBR, where most of the outbreaks occur. However, the ecological link between exploited fishes and COTS remains uncertain.

The reef fishes that fishermen target are unlikely to prey upon COTS, but there may be several links in the ecological chain: more large predatory fishes in no-take areas may reduce the numbers of smaller fishes, in turn reducing predation on invertebrate species such as worms and crustaceans that prey on very small juvenile starfish. This process remains to be fully researched.

This study provides an additional argument for establishing effective marine protected areas to increase the ecological resilience of coral reefs faced with the threat of climate change.

HIGHLIGHTS

CReefs research fast informing
the global Census of Marine Life



Image: Gary Cranitch © Queensland Museum.

Sea urchin.

CReefs (short for Census of Coral Reefs) is an international project forming part of the global Census of Marine Life (CoML), a decadal program initiated by the Sloan Foundation to understand the past, present and future states of marine biodiversity.

The CReefs project aims to discover how many species live on coral reefs, with current estimates ranging between one and nine million species. The Australian node of CReefs is supported by substantial funding from BHP Billiton.

During the reporting period, the first round of CReefs field expeditions was completed with an expedition to Heron Island on the Great Barrier Reef, and the second round started with return expeditions to Lizard Island on the Great Barrier Reef and Ningaloo Reef in Western Australia.

Significant new investment in the project has been achieved through co-investment with the Australian Biological Resources Study (ABRS), more than doubling the original budget for taxonomic support. This funding was allocated to research projects using a peer-reviewed competitive process.

A new collaboration with the Ocean Genome Legacy Project has been established this year. This collaboration will enhance the capacity of the project to produce genetic barcodes of the species sampled and represents a significant additional co-investment in the project.

Six BHP Billiton employees joined CReefs field expeditions this year. As with the previous year, feedback from all these employees was very positive and their feedback continues to be helpful to the project team in providing them with the best possible experience. Throughout the year, the project enjoyed substantial media coverage within Australia and globally.

The project has also been recognised by receiving an "Outstanding Achievement Award for Collaboration Outside the Census" at the recent all programs meeting of the CoML in Long Beach.

HIGHLIGHTS

Baby fish shaped by mothers' stress



Damselfish.

Stressed reef fish mothers produce highly active babies, and this affects their survival and has important implications for fish populations in a changing environment, according to new research.

Dr Monica Gagliano, a research fellow with the AIMS@JCU Joint Venture, worked with colleague Dr Mark McCormick from the ARC Centre of Excellence for Coral Reef Studies on a study that deepens understanding of how stress affects the dynamics of wild fish populations and hence how fish may cope with increasing human-induced stresses.

This work has implications for management of fisheries resources as well as increasing our knowledge of the basic physiological processes governing the life cycles of fish.

Dr Gagliano and Dr McCormick have shown that the parental environment of a common reef species, Ambon damselfish, is crucial for the future lives of their offspring. In their laboratory research, they determined the effects of maternal stress on offspring characteristics by exposing fertilised fish eggs gathered from the wild to different levels of the stress hormone cortisol.

Baby fish can't make these important hormones until later in life, so their initial development is determined by hormones they obtain from their mothers.

Previous studies had shown that females of this species release cortisol from their ovaries in response to environmental stress; those fish in isolated reefs with few predators or competitors show low levels of the hormone while those in high stress environments bathe their eggs in high levels of the hormone. The present study shows just what all that stress hormone can do to the eggs.

If the mother fish is more stressed and she passes on more cortisol, then the offspring will have a faster developmental rhythm and therefore errors will be more likely in their development. One likely result of this is that the offspring are born asymmetrical.

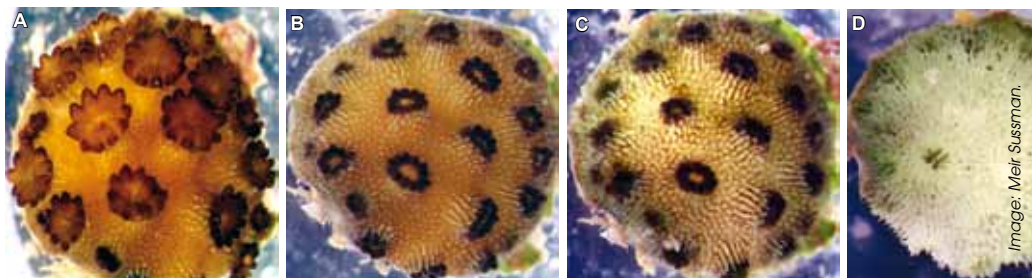
Research published in early 2008 by Dr Gagliano and colleagues showed that fish born with asymmetrical ear bones (otoliths) face huge problems negotiating the open ocean stage of their development, and many are lost at sea before they can settle on a reef to breed. Their asymmetry interfered with their hearing, making it hard for them to home in on reef-related sounds.

Dr Gagliano's latest research also shows that stress, in this case maternal stress, has a large measurable effect on the shape of the ear bones, with those baby fish receiving the high dose of cortisol being more than twice as likely to have asymmetrical ear bones compared with those that received none.

Together, this research suggests that stressed mothers produce offspring that are much less likely to survive. Mothers in healthy, low stress environments are likely to contribute most to the next generation.

HIGHLIGHTS

Coral disease found to have similar MO to cholera



*Effect of *Vibrio coralliilyticus* coral pathogen on the juvenile coral *Acropora millepora*. A. Before exposure. B. 2h following exposure. C. 4 h following exposure. D. 8 h following exposure.*

The complexities of coral disease are starting to be unravelled with the key revelation that a similar mechanism that causes cholera in humans may be causing White Syndrome (WS) in coral.

Mr Meir Sussman, a postgraduate student at James Cook University (JCU), along with AIMS scientist Dr David Bourne, coral biologist Dr Bette Willis at the ARC Centre of Excellence for Coral Reef Studies, and colleagues from the University of Groningen in the Netherlands and the Palau Coral Reef Center, have shown for the first time how bacterial WS kills coral.

A bacterial zinc-metalloprotease enzyme has been revealed as central in the WS disease process. The enzyme carries out a two-pronged attack, first causing whitening of coral tissue as symbiotic algae are targeted, and subsequently causing coral tissue lesions. This two-stage process leads to the distinctive appearance of bands of white coral skeleton typical of the disease.

The enzyme disturbs the ability of the symbiotic algae living in coral to carry out photosynthesis and breaks down the symbiosis between the coral and the algae, leading to death of the coral. The bleaching caused by WS is distinct from that caused by thermal stress. Unlike bleached corals which can recover from short-term temperature stress, WS causes the infected coral to die, though lesions may stop progressing if the coral can mount an immune response.

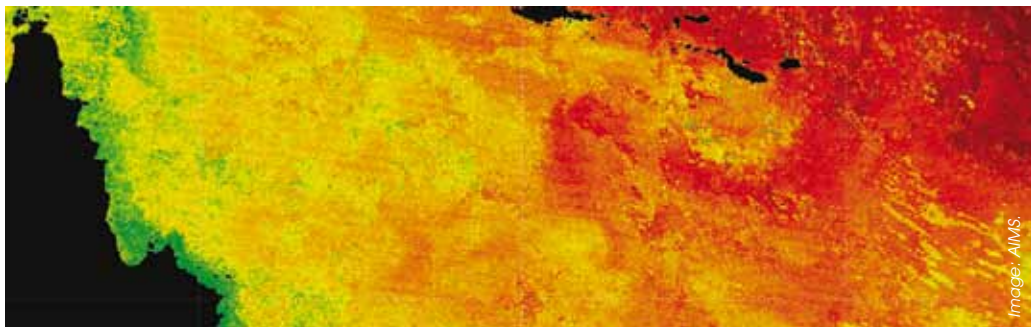
The research team published pioneering work last year that uncovered the bacterial cause of WS, specifically certain members of a common family of aquatic bacteria known as *Vibrios*. Another member of the *Vibrio* family causes cholera in humans.

While there are many kinds of *Vibrio* bacterial species, only a small group carrying the gene for the zinc-metalloprotease enzyme can cause WS. This enzyme is a powerful weapon as it disrupts basic processes in target organisms at a cellular level. This mechanism of attack against cells is similar to the one used by the *Vibrio* bacterial species that causes cholera.

This study is the first to investigate the clinical effect of the enzyme zinc-metalloprotease on corals. More work needs to be done to determine the exact process by which the enzyme affects the way the algae photosynthesise within coral and the extent to which the temperature of the surrounding water plays a role in helping the enzyme do its work.

HIGHLIGHTS

Climate zones shift south as Australia's northern oceans warm



NASA satellite image of sea surface temperature of the Coral sea

Since the 1950s, average sea surface temperatures in northeast and northwest tropical Australian waters have increased steadily, causing a 200km shift southwards of climate zones along the northeast coast and an expansion in the area that can be designated “the tropics”.

Work by senior AIMS scientist and climate change team leader Dr Janice Lough shows that if current trends continue, annual sea surface temperatures in northern Australian tropical waters could be around half a degree warmer and those of more southern parts about two degrees warmer within the next 100 years, with dire consequences for our coral reefs, particularly those in the more southerly areas.

This work provides further evidence of a significant widening of the global tropical belt. These rapid changes in oceanic climate are already causing responses in Australia's tropical marine ecosystems and, if present rates continue, these will only intensify.

Many components of Australia's unique tropical ecosystems are sensitive and vulnerable to the changing climate, as are many of Australia's marine flora and fauna. Although well protected, Australia's tropical reefs have not been immune to already observed impacts of a changing climate, such as mass coral bleaching events linked to warmer waters.

Dr Lough has analysed temperature records going back to 1950, seeking answers to the following questions: has Australia's tropical climate already changed? Are rates of warming similar along the northwest and northeast coasts? Are there latitudinal differences in the rate of warming?

Her study used instrumental sea surface temperature (SST) records to examine annual average, maximum and minimum sea surface temperatures. Each variable has a profound impact on coral growth and health. She has found that Australia's tropical ocean climate has already changed and that the rates of change vary in different regions.

Dr Lough's work is part of an attempt to gather hard data on regional variation in the impacts of climate change. It has long been known that climate change effects are not evenly distributed and will affect different areas in different ways. She has found that annual sea surface temperatures down to around 30 degrees south (about level with Coffs Harbour on the east coast) have already warmed between 1950 and 2007. This warming has shifted average climatic zones by about 200km southwards on the east coast and about half that distance on the west coast.

REPORT OF OPERATIONS

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- ◆ Report from AIMS Chair, Dr Ian Gould
- ◆ Report from AIMS CEO, Dr Ian Poiner
- ◆ Introduction
- ◆ Contribution to National Research Priority Goals
- ◆ The 2007-2011 Research Plan
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Australian Government



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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 out of session on 11 September 2009.

Dr Ian Gould
Chairman
Australian Institute of Marine Science

Dr Ian Poiner
Chief Executive Officer
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REPORT FROM AIMS CHAIR, DR IAN GOULD



BUILDING AN OCEANIC SUPERPOWER

Tropical marine science is central to the big issues facing Australia: climate; environmental sustainability; economic growth; national security; energy security; and food security. AIMS' role in researching the scientific foundations of these issues places it at the forefront in providing the intellectual means to set insightful and far-reaching policy. Australia has the natural assets, research base and global linkages to aspire realistically to be an oceanic superpower, at the forefront internationally in things marine. In fact, many of the elements of superpower status are already in place – extensive, innovative and diverse marine territory, some of the best and most respected marine scientists in the world, a burgeoning marine industry sector, growing political and community support and a sense of national identity centred around the coasts and oceans.

But there is much more to do. Because of the extent of the challenge, we have barely skimmed the surface of many of the complexities in our vast territorial waters and coastal zones. For example, there is still much to learn about many of the dynamic oceanic systems that affect climate and how the ocean itself will be affected by climate change. These are issues of great urgency and AIMS believes they have been insufficiently factored in to climate change prediction and planning or appropriately reflected in national and international global environmental change research programs and associated policy initiatives. Development of sustainable energy and energy self-sufficiency are driving an expansion of Australia's offshore oil and gas enterprises, although discovery and exploration of these resources are largely in their early stages. Considerable research needs to be done to develop innovative technologies to capture these opportunities in the most sustainable way possible. The Australian tendency to seek out the coast as a place to live or holiday, coupled with increasing population, places rising pressures on coastal areas that have still to be properly investigated. Also, more needs to be known about this nation's northern waters in order to ensure greater national security and protect our fish stocks from illegal fishing. Research needs to replace conjecture within a collaborative approach.

UNDERPINNING MARINE INDUSTRIES

AIMS has identified a number of ways to ensure a robust marine sector into the future. An expanded scientific research effort is one essential, but another is properly evaluating marine

industry so its worth is clearly articulated and included in relevant economic analyses and planning processes. The AIMS Index of Marine Industry, prepared by Deloitte and launched in November 2008, was instigated by AIMS for this purpose: bringing together information about the economic value of the Australian marine industry sector and so demonstrating the importance of our marine territories to this nation. This is the first time that all elements of the huge Australian marine enterprise in all its tangible economic aspects, from offshore oil and gas exploration to marine based tourism, have been brought together into a single category. This is a positive step towards placing future research, management and sustainable development onto a systematic, prioritised and cohesive basis.

The AIMS Index shows the value of the sector but also, crucially, it shows the gaps that need to be filled to give the whole picture. We will continue filling out that picture with each annual update of the Index. In its first cut, the AIMS Index shows a conservative value of \$38 billion in 2006-07, 42 per cent higher than only six years earlier. The trend is upwards, confirming that the marine sector has a large and growing role in Australia's economic, and hence social, prosperity. AIMS will continue to liberate this potential, especially in tropical zones, through world-class and carefully targeted research responsive to this nation's marine science priorities. The Index is a new part of that mission.

A FRAMEWORK FOR MARINE SCIENCE INNOVATION DEVELOPMENT

Soon after the AIMS Index, Minister Carr launched another significant milestone in the development of Australian marine science. A Marine Nation: National Framework for Marine Research and Innovation was prepared under the auspices of the Oceans Policy Science Advisory Group (OPSAG) by a steering committee that included AIMS CEO Dr Ian Poiner. This document highlights the major opportunities and identifies the challenges facing Australia's marine and coastal domain and sets out the knowledge, data and new technologies needed by government, industry and the community to benefit from these opportunities and to respond to the challenge posed in the Review of the National Innovation System.

The Framework provides for a renewed national effort in marine science through better planning, co-ordination, collaboration and communication; and identifies investment in skills and infrastructure that will see Australia best equipped to exercise its sovereign rights and responsibilities over its coasts and oceans. Specifically, the Framework identifies the following opportunities and challenges:

- ◆ Increased economic and energy security from marine and subsea resources;
- ◆ Conservation of marine biodiversity and ecosystem services;
- ◆ Management and protection of the marine coastal environment;
- ◆ Climate change; and
- ◆ National security and safety at sea.

Creating a strong and fruitful future for the marine sector to benefit all Australians means creating knowledge, and lots of it. The Framework document is the first ever concerted national co-ordinated approach to marine science. It is specifically designed to give this nation the best possible "triple bottom line" return on its investment in marine science, innovation and industry.

REVIEW OF THE NATIONAL INNOVATION SYSTEM

The Review of the National Innovation System that reported in August 2008 specifically mentioned marine industry as a priority area capable of leveraging Australia's distinctive

geography, economy and capability. The document emerging from the Review, Venturous Australia, described recent investment in marine science as “underweight” and in need of bolstering. The review, conducted by an expert panel chaired by Dr Terry Cutler, analysed Australia’s innovation system and made a series of recommendations to revitalise it. AIMS contributed a detailed report to the wide-ranging review and hosted Dr Cutler for a briefing in June 2008.

PLANNING FOR THE CHALLENGES AHEAD

The Commonwealth Government has recognised the importance of AIMS’ research in many ways, including through providing \$55 million in new infrastructure funding in the Budget brought down in May 2009, the details of which may be found elsewhere in this report. With a clear view on what needs to be done, and existing and new tools to carry it out, AIMS has been formulating a long-term strategy for the marine science needed in the future. This strategy is predicated on an understanding that if the current trajectory of activity and funding were to remain, we would find ourselves falling short of requirements. AIMS’ roadmap for research into the future is designed to ensure the known knowledge gaps will be addressed in the most efficient and cost-effective way.

The Government’s recognition of the central importance of our marine assets to the future prosperity, security and environmental sustainability of this nation is gratifying indeed. Our responses to challenges and opportunities require innovative science and technology, the kind that AIMS is able to deliver after many years of building world-leading expertise and extensive research connections. It is only this high level science and technology that can deliver a more complete understanding of marine ecosystems and allow us to better forecast the future and to formulate mitigation measures in the face of global change.

AIMS GOVERNANCE

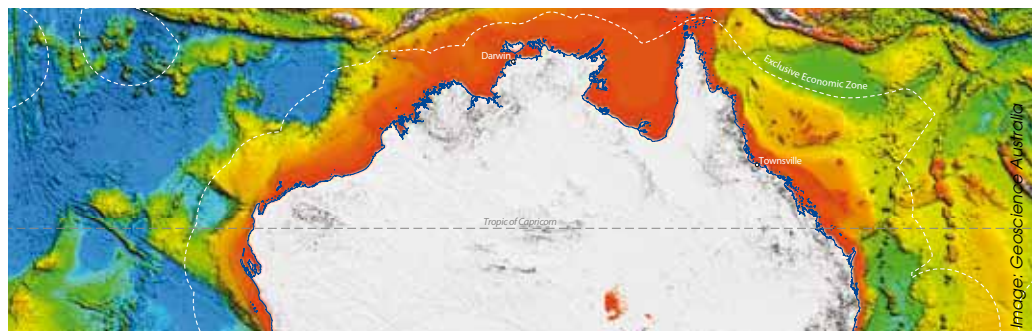
During the reporting period and following full consultation with Minister Carr and the Department of Innovation, Industry, Science and Research, AIMS Council reappointed Dr Ian Poiner as AIMS CEO for a further two years from July 2009.

The AIMS Council has worked hard with management during the year and I publicly acknowledge Council members for their contribution to the Institute’s strategic governance during a time of significant expansion and change, including the successful development and implementation of major scientific contractual relationships with industry.

Our staff have again contributed their expertise, commitment and leadership in carrying out AIMS’ mission efficiently and effectively for the benefit of all Australians and the wider marine science community. Thanks and congratulations to all AIMS staff for their efforts in scientific research, community consultation, training, communication and transfer of results, science support and administration. AIMS continues to grow, with staff numbers recently reaching nearly 200, but more young scientists will be needed if we are to fully exploit the potential of our new infrastructure. AIMS’ high standing in the eyes of government and the national and international marine science community is a testament to the work of its staff and management and a justification of such future ambitions.



REPORT FROM AIMS CEO, DR IAN POINER



AIMS: RESEARCH FOR A MARINE NATION

Never has marine science been so important to Australia's national interests as it is now. Australia will increasingly depend upon its marine estate for environmentally and economically sustainable industry as this country forges an identity as a marine nation. We have immense current and potential riches in our marine territory. They can only be protected and sustainably used through a heightened effort in marine science.

We don't know enough yet about how marine ecosystems will respond to changes that are already manifesting and are likely to accelerate, particularly those associated with global warming and ocean acidification. Time is getting short and we have much to find out about how vulnerable and how resilient these ecosystems are, and all the subtle ways that factors such as water quality, for example, are linked to climate. Not only are the oceans central to determining how climate change will play out globally, but they will themselves be changed as the planet warms, in ways that we don't fully understand. We have a pretty fair idea where the "unknowns" are. We now need to ensure that we can replace the unknowns with knowledge as soon as possible. AIMS is well equipped, and about to become even better equipped, to do just that.

It has been a momentous year for AIMS with some pivotal developments. Among them was the announcement as part of the Federal Budget in May 2009 to provide \$55 million in new infrastructure funding through the Marine and Climate Super Science initiative. This money will bolster a range of AIMS infrastructure in Townsville and Darwin under the umbrella of the Tropical Marine Research Facility Project and will greatly upgrade not just our range of research facilities but also our ways of doing things, such as our energy efficiency measures.

Most exciting is the capacity to build the Australian Tropical Oceans Simulator at the Townsville site. This new building will give AIMS and Australia an unprecedented ability to carry out international-standard marine research to understand the effects of global change and other stressors on complex marine processes. This understanding will allow better prediction of how global change will impact on complex marine processes such as those involved in the growth of coral reefs. This state-of-the-art facility will also allow experiments on the effects of coastal development such as farming, cane growing and industrial facilities,

to improve our understanding of impacts and provide advice on management options to ensure sustainable agriculture and healthy marine ecosystems such as the Great Barrier Reef.

Also in this reporting period we launched the AIMS Index of Marine Industry, as outlined in the report of the AIMS Chair. This document is likely to become an essential document for government planning processes, as it brings all marine industries into a single category to ensure that they are considered together and policy framed accordingly.

In March 2009 AIMS was heavily involved in the launch by Minister Carr of OPSAG's A Marine Nation: National Framework for Marine Research and Innovation. This is the blueprint for a coherent future effort in marine science, created in light of the importance of the marine sector to national prosperity and security. The document was produced by a steering committee chaired by Dr Neville Smith from the Bureau of Meteorology and made up of members of the OPSAG Framework steering committee: Drs Michael Stoddard and John Gunn from the Australian Antarctic Division, Dr Clinton Foster from Geoscience Australia, Dr Greg Ayers of CSIRO, Professor Colin Buxton from the Tasmanian Aquaculture and Fisheries Institute at the University of Tasmania, Professor Chris Cocklin from James Cook University and myself. At the launch, Minister Carr said "This framework identifies the research, development and innovation we need to consolidate our position as a great marine nation." It is heartening to see the Commonwealth Government making marine science an innovation priority, recognising its growth and wealth potential. Many of the key elements are now in place for Australia to assume the marine nation title.



The Minister for Innovation, Industry, Science and Research, Senator the Hon Kim Carr, with AIMS CEO Dr Ian Poiner at the launch of the AIMS Index of Marine Industry, Parliament House Canberra, October 2008.

AIMS has significantly expanded both its Western Australian and Northern Territory operations during the reporting period and has named new science leaders for both locations. Professor David Parry took over as head of AIMS' NT operation at the Arafura Timor Research Facility in Darwin in March 2009. Professor Parry brings a wealth of achievement in marine and coastal environmental chemistry, with particular emphasis on aquatic pollution, and his appointment takes AIMS NT into a new era with a growing focus on fundamental processes in the regional marine environment. He has come to AIMS from Charles Darwin University where his work has included the use of natural and constructed wetlands to remediate contaminated waters around mine sites and industrial areas. He has long established research connections with AIMS scientists and is building upon these to extend the Institute's work in a region of great importance to AIMS' research goals.

In May 2009 we announced the appointment of Dr Jamie Oliver as AIMS' WA science leader. Dr Oliver, who will take up his position in September 2009, has been working in recent times in senior scientific positions with the WorldFish Center in Penang, Malaysia. He is making a welcome return to the AIMS fold: he worked for AIMS in the mid-1990s in Townsville, and also for the Great Barrier Reef Marine Park Authority, so he is well known in the Australian marine science community. His pioneering work on the ReefBase global coral reef information system is just one example of his innovative scientific work. ReefBase is the official database of the Global Coral Reef Monitoring Network, as well as the International Coral Reef Action Network, and is housed at the WorldFish Center. In his AIMS WA role managing the Exploring Marine Biodiversity program, Dr Oliver will oversee a team that is filling the gaps in understanding of patterns and processes of tropical marine biodiversity. Biodiversity research is one of AIMS' great strengths and is at the heart of the WA research program, a program that has been growing rapidly through recent agreements.

Our WA research program is burgeoning and this was further boosted by the signing, in March 2009, of a Memorandum of Understanding between AIMS and the University of Western Australia. The MOU was announced by Minister Carr in Perth. Under the agreement, worth more than \$2 million over five years, UWA and AIMS will share resources to build new capacity in Western Australia to address pressing marine science issues. Establishing a formal mechanism to link UWA and AIMS' research training in marine science has ramifications for the State's future economic prosperity, environmental health and security. The challenges of climate change and the opportunities for sustainable growth of marine industries off the Western Australian coast, including offshore energy, make increased effort in marine science essential.

The Scott Reef Research Project being undertaken by AIMS with funding from the Browse Basin Joint Venture led by Woodside Energy gathered pace during the reporting period and was a major driver of AIMS' WA expansion. This four-year project will provide a comprehensive understanding of biodiversity, oceanography and ecosystems on and around Scott Reef off northwest Australia.

In November 2008 AIMS played a central role in a landmark workshop in Townsville that brought together representatives of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI). Six countries in the region have joined forces to ensure future sustainability and security of the Coral Triangle, an area that sustains 200 million people to Australia's north. The workshop convened by the Australian Government was the first opportunity for representatives of the Coral Triangle to confer with Australian experts and seek input and expertise on the challenges inherent to the area. AIMS scientists along with

colleagues from the ARC Centre of Excellence for Coral Reef Studies worked with about 30 CTI representatives to begin the process of establishing effective ways to ensure that the lives of the large populations in the Coral Triangle are secure and prosperous. The CTI is an ambitious program involving Indonesia, the Philippines, Malaysia, Papua New Guinea, the Solomon Islands and Timor Leste. The marine-based natural resources of the Coral Triangle and the economic and social benefits they generate are at risk, threatened by a range of factors such as over-fishing, coral bleaching and sedimentation from coastal development.

In October 2008 the then Queensland Minister for Tourism, Regional Development and Industry, Desley Boyle MP, opened the new AIMS Centre for Marine Microbiology and Genetics Research (CMMG). This was a huge stride forward in making the Institute an international player in the growing field of marine microbiology. Support for the CMMG has been provided by the Queensland Government under its Smart State Research Facilities fund and by the Commonwealth Government. Symbiosis is one of the major themes of the new work being done there. This includes how the various relationships that form between microbes influence, for example, the health of corals and reef ecosystems and the capacity to develop a viable rock lobster aquaculture industry. Little is known about the fundamental processes of microbial symbiosis in the tropical marine world, and the new AIMS CMMG facility is developing a robust research program designed to fill the gaps.

In September 2008 AIMS participated in the worldwide announcement of stunning initial outcomes from the CReefs Australian node, one year into the four-year project. CReefs is a multi-agency collaboration, led by scientists at AIMS, the Smithsonian Institution and the Pacific Islands Fisheries Science Center of the National Oceanic and Atmospheric Administration. Hundreds of animals new to science were discovered in the first three CReefs expeditions in 2008, to Lizard and Heron Islands on the Great Barrier Reef and Ningaloo Reef off Western Australia. As chair of the Scientific Steering Committee of the Census of Marine Life (CoML) that operates the CReefs project, I have been fascinated and amazed at what marine life is still there to be discovered, even in places frequented by divers. It confirms what marine scientists have always believed – that we have barely touched the surface of what the oceans contain. The CoML is due to release its first global census in October 2010.

In July 2008 the Prime Minister the Hon Kevin Rudd and the Minister for Climate Change and Water Senator the Hon Penny Wong were briefed on the forthcoming Reef Atlas when they visited Port Douglas and met with representatives from the Reef and Rainforest Research Centre (RCCC) and AIMS. The Prime Minister and Senator Wong were shown a trial version of the Reef Atlas which is funded from the Australian Government's Marine and Tropical Sciences Research Facility (MTSRF) program. MTSRF is working collaboratively with scientists from AIMS and RRRC on developing the Atlas. It will be a one-stop shop on the web for data, information and analyses on contemporary environmental issues facing the Great Barrier Reef and its catchments. As threats from climate change, poor water quality and intensifying human use increase, the Reef Atlas will help assess their likely impacts and ways to mitigate them, ensuring that managing and conserving this invaluable natural asset is knowledge-based.

We are now in the second year of our *Research Plan 2007-2011*. This plan has been successful to date in positioning the Institute for continued growth by expanding the range of disciplines in which we operate, building our technological capability, broadening our user base and extending the geographical application of our science. In mid-2008 we expanded our research teams from four to five. In effect, we split the biodiversity team in two, creating



AIMS CEO Dr Ian Poiner and Chair of the Great Barrier Reef Marine Park Authority Dr Russell Reichelt brief Prime Minister Kevin Rudd during the PM's visit in 2008 to Port Douglas.

a Western Australian-based team, Exploring Marine Biodiversity, and a Townsville based team, Supporting Sustainable Use of Marine Biodiversity. Alongside the other research teams, Measuring Water Quality and Ecosystem Health, Responding to Climate Change and Understanding Marine Microbes and Symbioses, our research is well attuned to national priorities and producing strong, targeted results.

During 2008-2009, AIMS' achievements continued to attract national and international attention, emphasising the Institute's world-class expertise, its commitment to scientific research excellence and the value of its collaborative networks. After a record-breaking year in 2007-2008 when AIMS exceeded the milestone of 100 peer reviewed publications for the first time, we have gone even further this year with 119 peer reviewed publications. This points to AIMS' continued central role in extending the frontiers of knowledge in tropical marine science and its high and growing research productivity.

MAJOR SCIENCE ANNOUNCEMENTS FOR THE YEAR

Coral calcification

A landmark and rather controversial paper written by three AIMS scientists (Drs Glenn De'ath, Katharina Fabricius and Janice Lough) was published in *Science* on 2 January 2009 showing evidence of a sharp decline in growth rates in reef building corals on the Great Barrier Reef (see Highlight, p 7).

GBR protected from COTS

Creating "green zones" on the Great Barrier Reef has had a number of benefits, including inhibiting the proliferation of the coral-eating crown-of-thorns starfish. The AIMS Long-term Monitoring Program team has shown that reefs where fishing is not allowed are much less prone to infestation by the starfish than those not protected (see Highlight, p 22).

Coral disease

AIMS is one of the leading institutes worldwide researching the growing and worrying phenomenon of coral diseases. During the reporting period AIMS scientist Dr David Bourne and his collaborators uncovered the mechanism for infection in the coral disease White Syndrome (see Highlight, p 25).

WA Marine Bioresources Library

New insights into Western Australian marine biodiversity have become possible with the opening of the state's first Marine Bioresources Library, known as WAMBL. WAMBL has been established by AIMS and the WA Museum with start up funding from the Western Australian Marine Science Institute (WAMSI) (see Highlight, p 8).

Shifting climate zones

As climate change increasingly influences large-scale global processes, a measurable expansion of the areas that can be called "the tropics" has been documented (see Highlight p 25).

Mangroves book

Although mangroves are often the forgotten ecosystem, they are just as important as rainforests in terms of productivity and carbon cycling. AIMS' world renowned mangrove expert Dr Daniel Alongi has produced a milestone book that outlines the latest knowledge in how mangrove ecosystems function (see Highlight p 16).

Phase shifts

Although it had long been suspected that when coral reefs start to decline, the algae moves in to take over, a new survey by an AIMS scientist and colleagues has found that, to date, that hasn't always been the case (see Highlight p 10).

CReefs expeditions

The Australian node of the CReefs venture has had a fruitful and busy year, with successful expeditions in the reporting period to Heron and Lizard islands on the Great Barrier Reef and Ningaloo Reef off the Western Australian coast (see Highlight p 23).

Sponge research

New information about tropical sea sponges, crucial to many marine ecosystems, has been uncovered during the reporting period by AIMS scientists (see Highlight p 18-19).

A COMMITMENT TO COLLABORATION AND CO-INVESTMENT

AIMS is deeply committed to collaborative and co-invested research, ensuring the best return on investment for all parties. The Institute maintains the following relationships:

Collaborative networks such as:

AIMS@JCU

Australian Research Council Centre of Excellence for Coral Reef Studies (AIMS, ANU, JCU, University of Queensland)

Arafura Timor Research Facility (AIMS, ANU, Charles Darwin University)

Census of Marine Life (CoML) – 80 countries, 3,000 scientists

Oceans Policy Science Advisory Group (OPSAG) (Peak body)

Western Australian Marine Science Institution (WAMSI), involving AIMS, CSIRO, WA Government

Co-investment activities such as:

Oil and gas industry (e.g. Woodside Energy on behalf of the Browse Joint Venture.)
Aquaculture industry (e.g. Bluewater Barramundi)
Federal and State Governments (e.g. Department of Environment, Water, Heritage and the Arts, Western Australian Department of Environment and Conservation, Queensland Department of Primary Industries and Fisheries)
Foundations (e.g. Alfred P Sloan Foundation, BHP Billiton Foundation, GBR Foundation)
Mining Industry (e.g. Alcan Gove)
Natural Resource Management Agencies (e.g. Great Barrier Reef Marine Park Authority,
Tourism Industry (e.g. Association of Marine Park Tourism Operators)

THE YEAR AHEAD

In 2009–2010, AIMS will move forward with construction of new infrastructure funded by the Marine and Climate Super Science initiative. Planning is now well underway and construction of the new Australian Tropical Oceans Simulator in Townsville will begin before the end of 2009.

AIMS will produce an updated version of the AIMS Index of Marine Industry, with new data and an even more comprehensive view of this crucial industry sector.

DEVELOPMENTS SINCE 30 JUNE 2009

Minister Carr visited AIMS headquarters on 1 July 2009 to launch the Tropical Marine Facilities Project funded with \$55 million from the Marine and Climate Super Science initiative announced in the 2009 Federal Budget. While he was on site, he took the opportunity to discuss current and future research on marine ecosystem response to change and talk to some of the scientists involved with work that will be possible in the new Australian Tropical Oceans Simulator. He also boarded RV *Cape Ferguson* to meet a recently returned research team of AIMS and overseas scientists.

Minister Carr also attended an information session at Woodside Headquarters in Perth on 27 August 2009 in which he was briefed on progress with the Scott Reef Research Project (SRRP). AIMS is undertaking this project with funding from Woodside Energy on behalf of the Browse Joint Venture. Just before Minister Carr's visit, Woodside released the first SRRP Status Report, detailing a fruitful first year of the project.



Image: Dave Williams.

INTRODUCTION



Image: Steve Clarke.

RV Solander.

More than 70 per cent of Australia's territory is under water and much of this country's wealth and identity is bound up with its coastline and surrounding oceans. Australia has the potential to be an oceanic and environmental superpower, but its marine territory is yet to be fully explored and understood. There are many scientific challenges in its extensive waters and many rewards for pursuing them.

The marine sector contributes significantly to our national economy (at least eight per cent of GDP and growing faster than other sectors), through food and energy production, recreation and tourism. Australia's oceans have iconic environmental significance and stunning biodiversity, much of it endemic to our region. Our oceans also have great social value, holding a special place in the national psyche, particularly since 85 per cent of our population lives within 50km of the coast.

Right along the broad northern expanse of our island continent's waters, from the irreplaceable wonder of the Great Barrier Reef across the Top End and around to the burgeoning northwest coast, down to the pristine Ningaloo Reef, AIMS leads the field in researching this nation's tropical marine domain. Each region contains unique assemblages of organisms and is influenced by widely different oceanographic and coastal conditions. At AIMS, we identify the key ecological drivers for these ecosystems and work towards understanding how they may be connected, to generate knowledge for national benefit.

This is a time of unprecedented focus on the marine estate for energy, tourism, food, security and climate forecasting, and on emerging challenges such as climate change and ocean acidification.

Robust legislative and regulatory requirements at both Commonwealth and State level govern how users interact with marine ecosystems. However, an underpinning understanding of the ocean's complex environmental settings and the drivers of pattern and change in its ecological communities is often lacking.

Through investing in expertise and infrastructure at AIMS, the Australian Government is supporting the development and application of new knowledge for sustainable use of marine resources while safeguarding those resources and the marine environment into

the future. The Institute adds value to this investment through national and international collaborations, strategic alliances and strong links to industry and community.

AIMS consults with users of marine science and technology to develop its research program, which is prioritised within the framework established by our resources and capabilities, user needs and Commonwealth government research priorities. This research, the goals of which are described in the 2007-2011 Research Plan, is delivered through multidisciplinary research teams working in: biodiversity assessment; environmental change and impacts; status and trends of marine ecosystems; sustainable coastal development; water quality of the Great Barrier Reef World Heritage Area (GBRWhA); tropical aquaculture; and marine microbiology (see pages 49-50).

CONTRIBUTION TO NATIONAL RESEARCH PRIORITY GOALS



View towards Darwin from above the East Arm of Darwin Harbour.

AIMS' mission aligns strongly with the National Research Priority Goals (NRP) and most of the AIMS budget is dedicated to research supporting the National Priority of achieving "An Environmentally Sustainable Australia".

Within this Priority, seven goals have been articulated (see below) and the Institute's research portfolio matches four of them. We also recognise secondary delivery to some of the NRP Goals required to transform Australian industry and society.

The National Priorities and their subordinate but enabling goals are shown below. Below this, a table maps connections between our 08/09 Research Teams and the relevant Goals with the strength of the match shown as highly relevant (■), very relevant (■) or relevant (■). Finally, we illustrate our delivery to the NRP through examples.

NATIONAL RESEARCH PRIORITY GOALS

(for detail see Appendix 2)

A. An Environmentally Sustainable Australia

1. Water – a critical resource
2. Transforming existing industries
3. Overcoming soil loss, salinity and acidity
4. Reducing and capturing emissions in transport and energy generation
5. Sustainable use of Australia's biodiversity
6. Developing deep earth resources
7. Responding to climate change and variability

B. Promoting and Maintaining Good Health

1. A healthy start to life
2. Ageing well, ageing productively
3. Preventive healthcare
4. Strengthening Australia's social and economic fabric

C. Frontier Technologies for Building and Transforming Australian Industries

1. Breakthrough science
2. Frontier technologies
3. Advanced materials
4. Smart information use
5. Promoting an innovation culture and economy

D. Safeguarding Australia

1. Critical infrastructure
2. Understanding our region and the world
3. Protecting Australia from invasive diseases and pests
4. Protecting Australia from terrorism and crime
5. Transformational defence technologies

| National Priority | An Environmentally Sustainable Australia | | | | Frontier Technologies for Building and Transforming Australian Industries | | | Safeguarding Australia | |
|---|--|--|---|--|---|-----------------------------|-----------------------------|-------------------------------|--|
| | 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 | D1 Critical infrastructure | D2 Understanding our region and the World |
| Research Teams (2008-2011) | | | | | | | | | |
| Exploring Marine Biodiversity | | | | | | | | | |
| Supporting Sustainable Use of Marine Biodiversity | | | | | | | | | |
| Measuring Water Quality & Ecosystem Health | | | | | | | | | |
| Responding to Climate Change | | | | | | | | | |
| Understanding Marine Microbes & Symbioses | | | | | | | | | |

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 141-142.

EXAMPLES OF NATIONAL RESEARCH PRIORITY OUTCOMES

Great Barrier Reef Water Quality Monitoring Program supports Reef Rescue Plan
Output

The Great Barrier Reef Water Quality Protection Plan is a joint Commonwealth/Queensland initiative to halt and reverse the decline of water quality in inshore sections of the GBR Marine Park. In 08/09, AIMS completed the fourth year of measuring water quality parameters and reef health along the far northern Queensland coast as its contribution to the joint Marine Monitoring Program (MMP) to support this decadal program. The 2008-09 wet season delivered near record rainfalls, with Townsville receiving twice its average annual rainfall in just three months. Rain fell over more than half of Queensland and major flooding occurred between Townsville and Cairns and elsewhere. Satellite remote sensing revealed large flood plumes extending across the Great Barrier Reef Lagoon to the reef matrix on the outer half of the continental shelf. Much of this discoloured water was transported along the coast by the trade winds as far north as Cairns where there was a massive outpouring of water through the Grafton Passage into the Coral Sea. The low light and stress associated with weeks of exposure to brackish water caused coral bleaching and mortality on some inshore reefs.

Outcome 1

The MMP has established that levels of turbidity, dissolved phosphorus and chlorophyll are the indicators of water quality most likely to impact on reef health. AIMS is monitoring these variables with a network of autonomous samplers at 14 coastal sites as land management practices are changed in the coastal catchments with funding over five years from the \$200 million Reef Rescue Plan. The network provides feedback from the receiving waters to evaluate the performance of adaptive terrestrial management actions.

Outcome 2

The ultimate goal of the Reef Rescue Plan is to decrease the loads of sediments, nutrients and organic contaminants in terrestrial runoff, which should improve the resilience of inshore coral reefs to other stressors like fishing, floods (above) and climate change.

| | | | |
|----|----|----|----|
| A2 | A5 | A7 | C4 |
|----|----|----|----|

Seabed surveys for performance assessment of Ningaloo Reef Marine Park zoning
Output

In 08/09, AIMS and Geoscience Australia jointly surveyed over 1,000km² of deeper sections of the Ningaloo Marine Park by deploying GA's multi-beam habitat mapper from the RV *Solander*. The project was supported by funding from the CERF Marine Biodiversity Hub, a joint venture between AIMS, CSIRO, Geoscience Australia, Museum Victoria and the University of Tasmania. The Hub seeks to predict patterns of marine biodiversity and develop tools for managing Australia's marine biodiversity. The project developed biophysical surrogates from intensive sampling of the biology and environment at 160 sites, which were then used to predict biodiversity values over the full 1,000km² seascape.

Outcome 1

The map of habitats and biodiversity values predicted by the survey will be used to assess whether the current marine protected areas within the Ningaloo Marine Park meet the conservation objectives of the Marine Park Plan, which were developed without information from deep water habitats.

Outcome 2

The ultimate goal of this research is to enable managers to refine the Ningaloo Reef Marine Park Management Plan to optimise the balance between human use and conservation of the Park's resources, while preserving maximum resilience in the system to face the challenges of climate change.

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|----|----|----|----|
| A2 | A5 | A7 | C4 |
|----|----|----|----|

Domestication of tropical rock lobsters draws closer

Output

During 08/09, AIMS scientists collected plankton including live larval lobsters from oceanic waters and conducted ship-board experiments in the middle of the Coral Sea to establish the dietary preferences of animals in their natural environment. The knowledge gained by these experiments and others has improved the quality of artificial feeds and brought larval growth rates in hatchery-reared animals into line with those of their wild brethren.

Outcome

Lobsters are considered a challenging but desirable target for domestication and mass aquaculture. The challenge is the animal's lengthy and fragile larval development. The attraction is the almost insatiable global demand for this high unit-value food product. The recent improvements in larval performance in hatchery environments are closing the gap on the development of a new profitable export industry for Australia.

| | | | | |
|----|----|----|----|----|
| A2 | A5 | C1 | C2 | C4 |
|----|----|----|----|----|

Coral growth has slowed on the Great Barrier Reef

Output

Massive corals deposit annual growth bands in their permanent skeletons, providing dated histories of environmental factors like temperature and water quality over the past several hundred years. Coral record proxies have been used to date historical changes in sea water temperature, exposure to freshwater, exposure to oceanic upwelling, changes in terrestrial erosion and episodes of coral bleaching. In 07/08, analysis of a limited collection of coral cores revealed a recent decline in coral calcification rates in the past two decades. In 08/09, this trend was confirmed in massive corals from many other places in the Great Barrier Reef Marine Park.

Outcome 1

Historically, massive corals have grown faster in warmer water. The observed decrease in coral calcification over the past two decades despite global warming suggests that other factors have come into play, with the greatest concern being ocean acidification. This is expected to cause difficulty for all marine organisms building carbonate shells or skeletons. This credible information from GBR corals adds to the growing evidence base that global climate change will affect reef construction and provides support for the case to reduce carbon emissions to the atmosphere and ocean.

Outcome 2

While the decline in calcification rates has been observed in massive corals sampled from most sections of the GBR Marine Park, there are places where calcification has shown little or no change. Perhaps some parts of the GBR are different and this has triggered further research into whether there are local variations in system resilience worthy of attention from the Marine Park managers.

| | | | |
|----|----|----|----|
| A2 | A5 | A7 | C4 |
|----|----|----|----|

Great Barrier Reef Ocean Observing System (GBROOS) goes “live”

Output

In 07/08, AIMS began deploying infrastructure as part of Australia’s Integrated Marine Observing System (<http://www.imos.org.au>) funded by the Commonwealth and Queensland Governments to observe the impact of the adjacent Coral Sea upon the ecosystems of the Great Barrier Reef. GBROOS was justified on prior evidence that oceanic inflows (upwelling) drive the productivity of regional fisheries and sea temperatures (anomalies) drive the risk of bleaching and disease for GBR corals. The future of the GBR will be influenced by the changing heat loads and chemistry of the waters emanating from the western Pacific Ocean and GBROOS has been created to monitor and research these links. In a key development in 08/09, AIMS built and deployed wireless sensor networks over two coral reefs adjacent to island research stations in the southern GBR: Heron and One Tree owned and operated by the Universities of Queensland and Sydney respectively. These “plug and play” wireless networks will allow visiting researchers working from the research stations to collect continuous observations in “real time” from customised sensors. The sensor networks are also collecting long-term environmental data from these reefs and were shown to be robust while recording such data throughout the close passage of Severe Tropical Cyclone Hamish in March 2009.

Outcome 1

The wider network (GBROOS) will monitor dynamic interactions between ocean waters in the Coral Sea basin and shallow waters over the outer continental shelf and all of its observations will be made freely available soon after collection. This will provide all researchers with information about ocean forcing of shelf-scale processes.

Outcome 2

The wireless sensor networks around Heron and One Tree offer unprecedented support and opportunity for researchers (including postgraduate students) to study the effects of climate change upon GBR ecosystems.

| | | | |
|----|----|----|----|
| A5 | A7 | C2 | C4 |
|----|----|----|----|

THE 2007-2011 RESEARCH PLAN



The Kimberley Coast.

AIMS is currently operating under a four-year Research Plan that came into effect in July 2007. This plan was formulated following an extensive set of external performance reviews of the quality and impact of AIMS research done during the previous funding period. The outcomes of these external reviews were reported in the 2006-2007 Annual Report.

The AIMS Research Plan (2007-11) is based in large part upon continuing three core strengths of AIMS research identified by the external review panels as having superior quality and impact: the assessment and monitoring of biodiversity values, the measurement of water quality and environmental health and the understanding of ecological impacts of climate change.

In 2006-2007, the Institute created an internal AIMS Strategic Science Team independent of management and charged it with reviewing and recommending revision of our Strategic Directions. The outcome was validated through consultations with key stakeholders. This process confirmed the assessments of the independent review panels about enduring core strengths but also identified new needs and opportunity for research into marine microbiology, which included deeper understanding of the symbiosis between corals and their microbial symbionts. On this basis, our marine biotechnology area continued a change started by an external review in late 2005, and during the 2008-09 reporting period the new team delivering research into marine microbes and symbioses has grown and strengthened.

The 2007-2011 Research Plan is guided by the following 12 Key Result Areas (KRAs):

- 1.1 Assessments of tropical marine biodiversity
- 1.2 Accurate and timely information on issues and threats to coral reefs
- 1.3 Sustainable tropical aquaculture
- 1.4 Sustainable supply of bioresources
- 2.1 Human impacts on tropical water quality and ecosystem health
- 2.2 Tropical marine ecosystem processes and land-sea interactions
- 3.1 Marine climate history of northern Australia
- 3.2 Resilience and risk mapping in space and time
- 3.3 Ecological responses to climate change
- 3.4 Ocean Observing Systems to Monitor the Physical Environment

- 4.1 Understand and predict the responses of reef symbioses to environmental change
- 4.2 Understand the role of microbes in the functioning of healthy and stressed reefs

The first number in the KRA index indicates a high level theme like biodiversity or water quality. The second number in the index indicates a significant stream of related research questions within the theme. The 12 KRAs will be the units of review at the end of the four-year period.

PERFORMANCE MEASUREMENT

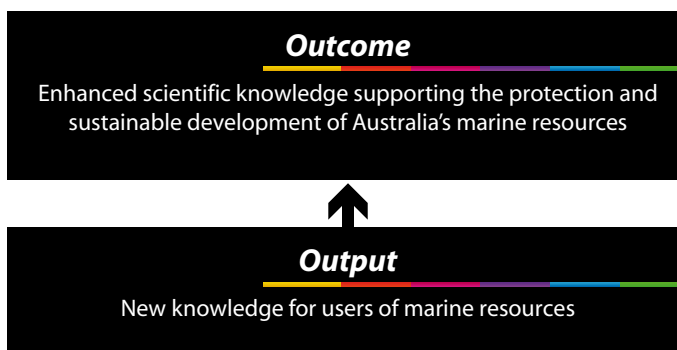


Communication of science outcomes.

AIMS provides high quality research for the protection and sustainable use of Australia's marine territory. This research directly supports Australian and State Government initiatives such as *Australia's Oceans Policy*, the *National Research Priorities*, the *Reef Water Quality Protection Plan*, the *Ningaloo Marine Park Management Plans* and the sustainable development of northern Australia's coastal resources. It is also attuned to the needs and priorities of industry, such as identification of new marine resource opportunities for industry and tropical aquaculture, and community aspirations, including the identification and protection of Australia's marine biodiversity.

The Institute measures its performance against indicators (described in Appendix 3). This report documents AIMS' performance in the second year of the 2007-2011 Research Plan. Regular review of performance and capabilities is a central feature of planning and continuous improvement at AIMS. Performance against agreed targets (AIMS Key Performance Goals) is reviewed regularly by the Management Group and Council and is reported annually to Parliament.

AIMS has established a number of performance indicators that are intended to maximise quality, efficiency, delivery and effectiveness of our science. This section of the report describes our achievements against those indicators (see Appendix 3, p 141) and demonstrates contributions to the AIMS Outcome which is agreed with the Australian Government as part of the outcome-output framework (see figure below).

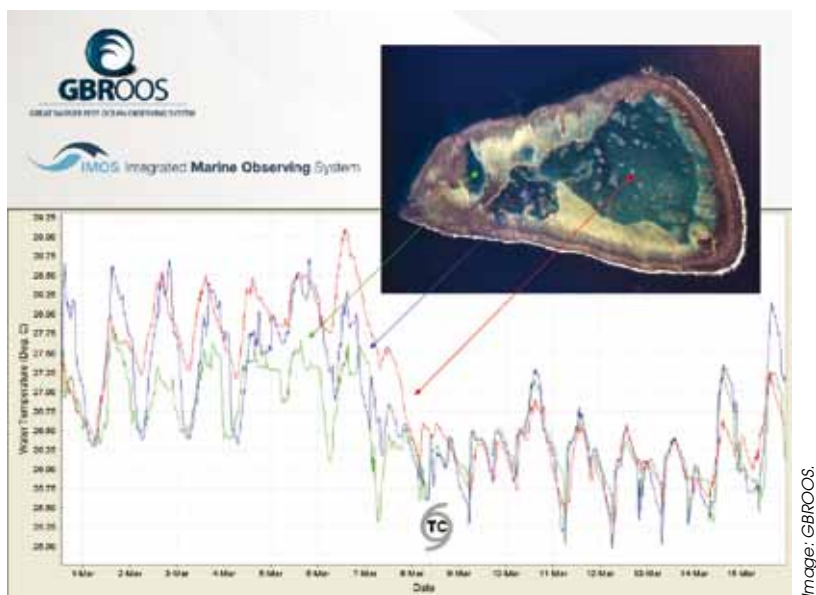


NEW KNOWLEDGE AND COLLABORATIVE R&D

Shift of resources to priority areas

AIMS has reached the half-way point of its four-year research plan. This plan further consolidates our research efforts in climate change, biodiversity and coastal water quality and arises from our commitment to providing a robust understanding for Australia of its tropical marine domain through long term fundamental science. Identification of natural patterns and detection of human impacts in marine ecosystems typically need broad-scale observations on lengthy time horizons. Long term datasets also enable us to estimate the resilience of ecosystems confronted by climate change. The current research plan has also seen the emergence of a team dedicated to marine microbiology and symbiosis highlighted by the official opening in October 2008 at our Townsville headquarters of the Centre for Marine Microbiology and Genetics Research, a partnership with the Queensland government. In preparing for this research plan, marine microbiology was identified as a significant knowledge gap for AIMS, and an area where Australia lags behind other developed nations. Researching the microbial world will complement our existing knowledge base, providing more sensitive indicators of climate change and water quality, and enable us to answer new questions that we haven't been able to answer before.

We pride ourselves on being responsive to the external world by being flexible internally. During the past year we have seen two disasters, one natural and the other human-induced, which have had significant impacts on the Australian marine territory. In March 2009, Tropical Cyclone Hamish did what few other cyclones have ever done, travelling the length of the Great Barrier Reef. Usually, tropical cyclones traverse the reef and impact the coastline. Instead, winds from Cyclone Hamish affected outer reefs north of Townsville, with the eye of the cyclone entering the Great Barrier Reef at a latitude equal to the Whitsunday region. The cyclone then travelled down through the reef in parallel with the Queensland coastline. During much of its journey, Hamish was a Category 5 cyclone. Significant potential existed for reef destruction which may reduce tourism values of reefs and deplete fishing stocks. Too much



Tracking Cyclone Hamish using GBROOS. Inset: One Tree Island

damage and the reefs may not recover. AIMS sent the RV *Cape Ferguson* and staff skilled in monitoring reef quality and health into the area immediately after the passage of Hamish to assess ecosystem damage. Our scientists observed the usual pattern of very patchy and localised damage. One unexpected observation was the presence of spectacular but ephemeral blooms of filamentous algae indicating massive nutrient enrichment of the ecosystem.

In the aftermath of Hamish, on 11 March 2009 the container ship *Pacific Adventurer* lost 31 containers holding ammonium nitrate and spilt 250 tonnes of oil which was then washed up on Sunshine Coast beaches, Bribie Island and Moreton Island. AIMS provided significant expert advice on the clean-up that followed this event.

The Coral Triangle is a region of extraordinary coral reef species diversity and abundance which exists within the territories of the Philippines, Malaysia, Indonesia, Timor Leste, Papua New Guinea and the Solomon Islands. These nations and their development partners have an intense desire to improve the management and conservation of their coral reefs within this region. AIMS, with its partner the ARC Centre of Excellence for Coral Reef Studies, responded to an approach from the Department of Environment, Water, Heritage and the Arts to plan and deliver a workshop of senior government and scientific personnel from these six countries as well as international NGOs as part of Australia's commitment to the Coral Triangle Initiative achieving its goals. More details can be found on page 21.

Our presence in Western Australia continues to grow and is the headquarters for one of our research teams (Exploring Marine Biodiversity) which focuses on studies based out of Western Australia. We are located on the campus of the University of Western Australia (UWA) with whom we have entered a research co-operation agreement to support research fellows and a pool of PhD students researching important marine science issues. Both AIMS and the university are investing into a fund to support these activities which will realise approximately \$2 million to fill some marine science gaps in tropical Western Australia. Growth in staff numbers has required us to move into expanded space at UWA, and this occurred in June 2009. We remain a key partner in the Western Australian Marine Science Institution (WAMSI), expanding our studies on the Ningaloo Reef Tract and conducting exploratory studies of habitats and biodiversity along the Kimberley Coast. Our collaboration on the Scott Reef Research Project with Woodside Energy Limited (on behalf of the Browse Joint Venture partners) will enable us to study a broad range of ecosystem processes on an oceanic coral reef in the Indian Ocean and to build knowledge of regional patterns and processes.

In September 2009, we will welcome a new leader for our WA operations and the Exploring Marine Biodiversity team with the arrival of Dr Jamie Oliver. Dr Oliver is currently Director of Science Coordination of WorldFish Centre, an international NGO headquartered in Penang, Malaysia.

Changes are afoot also for our operation in Darwin, with the appointment of Professor David Parry, formerly of Charles Darwin University. Professor Parry is a renowned environmental chemist with extensive partnerships with industry and an interest in sustainable coastal development. A new oceanographer, Dr David Williams, has joined Professor Parry at the Arafura Timor Research Facility (ATRF) in Darwin. The skills of these scientists are crucial to our ability to deliver quality science and advice with respect to Darwin Harbour, which is set to experience significant development especially due to plans to develop the Harbour as a hub for LNG processing.

This past year has seen an innovative spatial mapping tool become operational. What was the Reef Atlas has become the e-ATLAS (Australia's Tropical Land and Seas - <http://e-atlas.org.au/>). This initiative was commissioned by the Marine and Tropical Sciences Research Facility, which has delivered resources for the Atlas from the Commonwealth and from private sector sources via the actions of the Great Barrier Reef Foundation. The e-ATLAS will be an open knowledge repository summarising current knowledge relevant to the determination of risks, resilience and responses of the Great Barrier Reef, as well as the adjacent terrestrial ecosystems, to current and long-term pressures.



An e-ATLAS image showing two maps of sea surface temperature in the Great Barrier Reef, the left one from 1900-1920 and the right from 1980-2000, both derived from the Global Sea Surface Temperature database HadISST 1.1. Image: e-ATLAS

AIMS is the headquarters of the Great Barrier Reef Ocean Observing System, known as GBROOS, a significant node within the Australian Integrated Marine Observing System (IMOS). Providing real-time data from sensors deployed throughout the Great Barrier Reef, this facility will give the scientific community at large free access to data about the dynamic systems of the Reef. This system will monitor changes in the currents, temperature and chemistry of the Coral Sea (bounded by Queensland, PNG, Vanuatu and New Caledonia) and connect the behaviour of coastal boundary currents along the Queensland shelf margin with the performance of GBR ecosystems. The sensors are placed upstream of the East Australian Current which is critical to ecosystem performance, fisheries and weather patterns of the

eastern seaboard of Australia. Small changes in its behaviour that might be wrought by climate change may have profound effects for Australia and we need to be able to measure and understand its behaviour to better understand the implications of potential future changes. With time, these data streams will provide historical records that will allow scientists to better understand processes that govern GBR resilience and health and reveal yet to be seen events in the life of a reef. AIMS invests heavily in building, developing and deploying this modern infrastructure as well as the new tools for data warehousing and delivery through its Data and Knowledge Centre. This data will help us understand how our oceans are changing with the climate and how they are responding to these changes. In June 2009, GBROOS and IMOS celebrated the launch of the IMOS Data Portal, a tool to deliver data to the world from all of the IMOS nodes via the internet.

Scientific publications

Recent months have seen the launches of two major works produced by AIMS scientists. Dan Alongi published his book *The Energetics of Mangrove Forests* (Springer, ISBN 978-1-4020-4270-6), the result of 20 years of research on mangrove forests, one of the keystone ecosystems in the tropics. Madeleine van Oppen and Janice Lough edited a book titled *Coral Bleaching: Patterns, Processes, Causes and Consequences* (Springer: ISBN 978-3-540-69774-9) which contained 11 chapters by global experts in this climate change related phenomenon. Eric Wolanski, retired AIMS Senior Principal Research Scientist and AIMS Associate, was an editor of *Coastal Wetlands: An Integrated Ecosystem Approach* (Elsevier, ISBN 978-0-444-53103-2) which contained 32 chapters by international experts providing an understanding of the functioning of coastal ecosystems and the ecological services that they provide, and suggestions for their management.

Our scientific publication output in the peer-reviewed primary literature has increased 75 per cent since 2005, when we experienced a dip in publication output. This results from year-on-year increases of 15 to 30 per cent per annum. In 2008, the increase in number to 119 is almost 20 per cent above the previous year's output. In addition to these scholarly journals, AIMS scientists have published 11 book chapters. This increase has been anticipated and results from our strategic decision to target an increase in our number of postdoctoral fellows, dedication of effort to capacity building through postgraduate training and an increase in quantitative and modelling skills to extract patterns from our substantial data holdings. Just over one-third of our publication productivity comes from articles where a postgraduate student or postdoctoral fellow is the first author. This portion of our publication portfolio is likely to increase further with the investment into a collaboration research fund with the University of Western Australia which will again target postgraduate students and postdoctoral fellows. AIMS' publication portfolio should realise the fruits of this investment in the next year or two. Publication through higher degree research theses continues, with five submitted by students supervised by AIMS scientific staff. This is a significant reduction from last year and reflects the uncertain future of the joint venture AIMS@JCU which does not yet have a secure funding future.

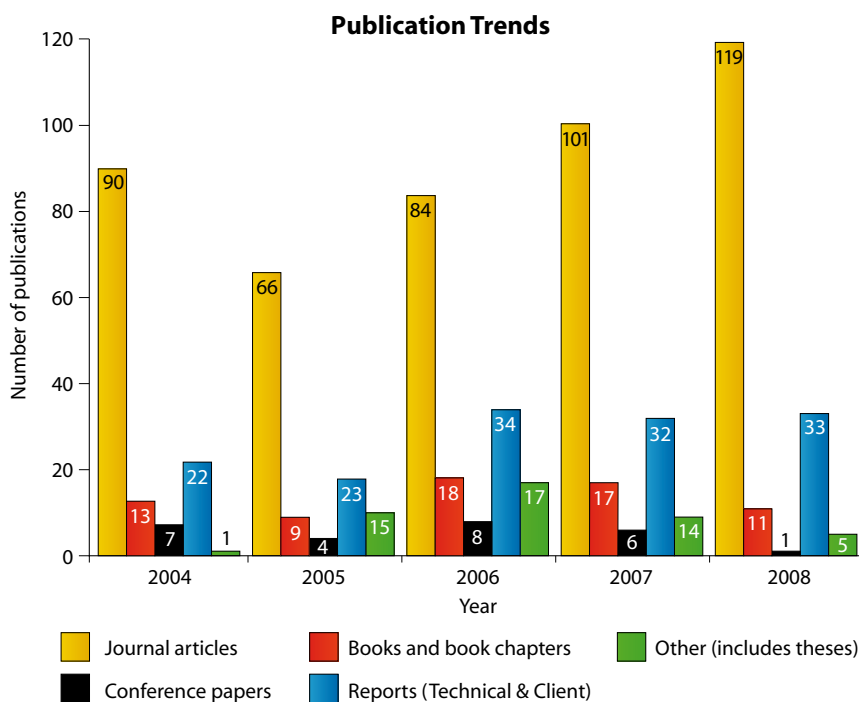
Our peer-reviewed publications appeared in over 60 different journals across many different scientific disciplines, reflecting our ability to undertake science on scales ranging from microorganisms to ecosystems to coastal oceanography. A number of these journals used photographic images from AIMS staff to highlight particular scientific articles, for example:

Underwood JN (2009) Genetic diversity and divergence among coastal and offshore reefs in a hard coral depend on geographic discontinuity and oceanic currents. *Evolutionary Applications* 2:222-233.

Bruno JF, Sweatman HPA, Precht WF, Selig ER and Schutte VGW (2009) Assessing evidence of phase shifts from coral to macroalgal dominance on coral reefs. *Ecology* 90: 1478-1484

Sweatman HPA (2008) No-take reserves protect coral reefs from predatory starfish. *Current Biology* 18: R598-R599.





AIMS researchers continue to contribute strongly within our core areas of biodiversity, water quality and climate change. Our publication portfolio also reflects the new and growing focus and investment in marine microbiology, which is beginning to contribute to our increased knowledge in the aforementioned core areas, as can be seen in the following examples: (full list in Appendix 4):

- ◆ Several of our researchers (Glenn De'ath, Katharina Fabricius, and Janice Lough) highlighted a phenomenon across the Great Barrier Reef of massive corals having reduced ability to produce their skeletons in recent years and attributed it to an emerging marine risk of ocean acidification due to increase atmospheric carbon dioxide. This research was published in the prestigious journal *Science*: De'ath AG, Lough JM and Fabricius KE (2009) Declining coral calcification on the Great Barrier Reef. *Science* 323: 116-119.
- ◆ Dr Eric Wolanski, retired AIMS Senior Principal Research Scientist and AIMS Associate, was a co-author on an international collaborative paper in *Science* which reported on the integrated value of mangroves, salt marshes, seagrass beds, nearshore coral reefs and sand dunes in coastal protection.
- ◆ Dr Walt Dunlap, Principal Research Scientist, was a co-author with colleagues from the United Kingdom and USA who published their finding of the transfer of key genes for an important enzyme pathway originated in micro-organisms in the internationally renowned journal *Proceedings of the National Academy of Sciences of the USA*.
- ◆ In addition to editing the book *Coral Bleaching: Patterns, Processes, Causes and Consequences* (Springer-Verlag, Berlin Heidelberg, ISBN: 978-3-540-69774-9), Madeleine van Oppen and Janice Lough also wrote several chapters in the book. Another AIMS

scientist (Ray Berkelmans) wrote two of the chapters in *Coral Bleaching*, with one of them asking the question “Bleaching and mortality thresholds: How much is too much?”

- ◆ The editorial board of the journal *Coral Reefs* voted AIMS Associate J. E. N. (Charlie) Veron’s report, “Mass Extinctions and Ocean Acidification: Biological Constraints on Geological Dilemmas” (volume 27, pages 459-472), its Best Paper of 2008.
- ◆ A paper by Dan Alongi, “Mangrove forests: Resilience, protection from tsunamis, and responses to global climate change”, was the most cited paper between April-June 2008 in the field of Earth and Planetary Sciences as measured by ScienceDirect (Elsevier).
- ◆ Several AIMS scientists contributed to the book “The Great Barrier Reef: Biology, Environment and Management” (CSIRO Publishing & Springer, ISBN: 978 1 4020 89497) edited by Pat Hutchings (Australian Museum), Mike Kingsford (JCU) and Ove Hoegh-Guldberg (UQ).
- ◆ “A changing climate for coral reefs” written by Janice Lough for the *Journal of Environmental Monitoring* was among the top 10 most downloaded articles for the journal for several months in 2008.
- ◆ Lough JM (2008) Shifting climate zones for Australia’s tropical marine ecosystems. *Geophysical Research Letters* 35, L14708 was selected as an American Geophysical Union Journal Highlight.
- ◆ An article by Scott Wooldridge “Water quality and coral bleaching thresholds: Formalising the linkage for the inshore reefs of the Great Barrier Reef, Australia” was published in *Marine Pollution Bulletin* (vol 58, pages 745-751)
- ◆ AIMS scientists published six papers in the ISME Journal, a collaborative journal publication between the International Society for Microbial Ecology and the Nature Publishing Group, a recognition by the NPG of the increasing global importance of the need to understand microbial ecology and oceanography.

AIMS researchers delivered over 160 presentations to stakeholders, as well as to scientific and industry conferences held in Australia and overseas. Thirty-six of these presentations were at the 11th International Coral Reef Symposium, Fort Lauderdale, USA July 2008. This symposium was attended by thousands of coral reef scientists from over 100 countries. The substantial AIMS presence at this meeting demonstrates our leadership in international coral reef science. As part of our investment in marine microbiology and an increase in critical mass within this field, AIMS scientists gave 16 presentations, five of them oral, at the 12th International Society for Microbial Ecology Congress held in Cairns (August 2008). This conference was attended by almost 1600 scientists from 54 countries and the Chair of the Organising Committee was our team leader for the Understanding Marine Microbiology and Symbioses team, Professor Linda Blackall. Given our key role in the Marine and Tropical Sciences Research Facility (MTSRF), 10 of the 77 presentations at its annual Conference were given by AIMS scientists. This forum provides an opportunity for the 15 partner agencies in this Facility to meet and report on progress but also deliver and interpret their research for users and stakeholders of the MTSRF, the major element of the Commonwealth Environmental Research Facilities program within the Department of Environment, Water, Heritage and the Arts. Several AIMS staff were on the organising committee of the 8th Indo-Pacific Fish Conference held in Fremantle (June 2009), with AIMS staff also giving eight presentations and chairing several conference sessions.

Three of our scientists gave oral presentations, including plenaries, at the World Oceans Conference 2009 held in Manado, Indonesia.

Citation Analysis

AIMS is the second and third most cited of Australian research institutes or universities based on citations per paper in the fields of 1) ecology and environment and 2) plant & animal science, respectively. The citation rate was over twice the global average in the field of ecology and environment and 70 per cent higher than the world average in the field of plant and animal science (Essential Science Indicators, Thomson Scientific).

Recognition by peers (prizes and invitations)

Awards and prizes to staff, students and associates

- ◆ As noted earlier, the editorial board of the journal *Coral Reefs* voted Charlie Veron's report, "Mass Extinctions and Ocean Acidification: Biological Constraints on Geological Dilemmas" (volume 27, pages 459-472), its Best Paper of 2008. This paper argued that ocean acidification could be the worst impact of climate change for coral reefs.
- ◆ Katharina Fabricius and Glenn De'ath accepted a prestigious EU Erasmus Mundus Visiting Scholar Grant to teach a Masters level course in coral reef and statistical ecology at University of Bremen, Germany.
- ◆ Petra Souter was awarded a grant under the International Science Linkages – Science Academies Program which is administered by the Australian Academy of Science to visit one of the world's leading bioinformatics groups at Pennsylvania State University, USA.
- ◆ CReefs won an "Outstanding Achievement Award for Collaboration Outside the Census" at the all programs in February, 2009 of the Census of Marine Life, a global, decade-long initiative to assess and explain the diversity, distribution, and abundance of life in the oceans.
- ◆ Janice Lough received a citation for excellence in refereeing articles by the Editor of Geophysical Research Letters (American Geophysical Union).
- ◆ Felipe Gusmao won the Peter Holloway Oceanography prize for best student presentation in oceanography at the 2009 meeting of the Australian Marine Sciences Association for his presentation "The use of Aminoacyl-tRNA synthetases (AARS) activity as an index of mesozooplankton growth off the Western Australian coast".
- ◆ Emily Howell, an AIMS@JCU PhD student, was awarded a Smart State PhD Scholarship for her studies on the genetic resilience of zooxanthellae populations: the role of coral symbionts in reef adaptation to climate change.
- ◆ Marnie Freckelton won first prize in the Biological Sciences section of the Townsville Festival of Life Sciences (October, 2008) for her work "Qualitative variation in colour morphs of *lanthella* sp. (Porifera : Verongida)" co-authored with her AIMS supervisors, Cherie Motti and Dianne Tapiolas.

Invited lectures

- ◆ Janice Lough was an invited speaker at the workshop "Ocean acidification - Australian impacts in the Global Context", organised by the Commonwealth Department of Climate Change and the Antarctic Climate and Ecosystems CRC held at the University of Tasmania in June 2008. The talk was titled "Massive coral growth histories: potential records of ocean acidification impacts?"
- ◆ Julian Caley was an invited presenter at the Council of Australian Museum Directors, Natural History Museums Roundtable conducted in Canberra in July 2008.
- ◆ At the 12th International Society for Microbial Ecology Congress held in Cairns in August, 2008, Linda Blackall gave an invited presentation entitled "Beneficial Reuse of Wastewater". At this same congress, David Bourne presented the invited talk "Corals and their associated Microbiota - Implications for Health, Bleaching And Disease".

- ◆ Lyndon Llewellyn was an invited presenter at the Ciguatera and other Marine Biotoxins workshop held in New Caledonia, hosted in October 2008 by the French Institut de Recherche pour le Développement and Secretariat of the Pacific Community. The presentation discussed the epidemiology of ciguatera and potential links to sea surface temperatures.
- ◆ Janice Lough presented "A changing climate for the Great Barrier Reef: physical observations and biological responses" at the invitation of the National Climate Change Monitoring Symposium held at the University of Sydney in December, 2008.
- ◆ At the invitation of the French Institut de Recherche pour le Développement, Janice Lough delivered an invited public lecture in New Caledonia in April 2009 called "A changing climate for coral reefs: evidence from the GBR".
- ◆ Nicole Webster presented an invited talk to the International Census of Marine Microbes at Woods Hole Oceanographic Institute on "Deep sequencing Reveals Exceptional Diversity and Alternative Lifestyles of Sponge Symbionts" (April, 2009).
- ◆ Andrew Negri was an invited speaker at a workshop on Minimising off-site movement of pesticides and impact on the Great Barrier Reef: A Risk Based Approach held by Land and Water Australia and CSIRO, May 2009.
- ◆ Andrew Negri was asked to present at a Woodside Energy, Pluto LNG Project Environmental Offset Research Workshop - to Identify Research Priorities for Improving Capacity to Manage Dredging Impacts on Tropical Coral Reef Communities held in Fremantle November 2008.
- ◆ Scott Bainbridge was invited to present "Monitoring Climate Change using sensor networks on the Great Barrier Reef" at the International Conference on Intelligent Sensors, Sensor Networks and Information Processing held in Sydney, December 2008.
- ◆ Linda Blackall was invited to Chair a session called "Mutualistic interactions: microbes with microbes" at the Gordon Conference on Marine Microbes held in Italy in July 2008.
- ◆ Linda Blackall was also invited to present on biofilms in marine waters at the joint International Society for Microbial Ecology-International Water Association Colloquium in Singapore in January 2009.
- ◆ Ian Poiner was invited to present "Australian marine science and technology matters" at the OPSAG Coasts and oceans into the future: Australia's marine domain held in Canberra March 2009.
- ◆ Ian Poiner was also invited to present "Coastal water quality, climate change and the future of the Great Barrier Reef: will managing for reef resilience work?" at the Queensland ATSE Seminar held in Brisbane, April 2009
- ◆ Ian Poiner (in conjunction with Andrew Johnson, CSIRO) was invited to present "Tropical Research and Innovation" at the James Cook University Townsville Tropical Solutions Workshop, April 2009.

Plenaries

AIMS researchers delivered the following keynote and plenary addresses:

- ◆ Julian Caley delivered a plenary address "Rarity in coral reef fishes" at the meeting Microbes in the Rare Biosphere, an event sponsored by the American Society of Microbiology.
- ◆ David McKinnon was a plenary speaker at the Indonesian Aquaculture Conference held in Lampung in July 2008. His talk was titled "Planning tools for tropical finfish cage culture".
- ◆ Sven Uthicke presented "Outbreaks and die-offs: Causes and consequences of large amplitude population density variations in Echinoderms" as a plenary address at the 13th International Echinoderm Conference held in Hobart in January 2009.
- ◆ Terry Done was one of the plenary speakers at the World Oceans Conference held in Manado, Indonesia in May 2009. His presentation described "Resilience in coral reefs: assessment, diagnosis and management".

- ◆ Dan Alongi also delivered a plenary talk at the World Oceans Conference called “Climate Change and the Tropical Coastal Zone: A Southeast Asian Perspective”.

Expert committees

AIMS provided expert advice to many State, Commonwealth and international Standing Committees or Working Groups (full list at Appendix 5) including:

- ◆ Ian Poiner (Chair) and Peter Doherty were appointed to Pacific Adventurer Oil Spill and Container Loss Scientific Advisory Committee by the Queensland Department of Transport and Main Roads.
- ◆ Andrew Heyward was a member of the Dredge Environment Management Group empanelled by the Western Australia Minister for the Environment for the Pluto Project.
- ◆ Simon Woodley chaired the Marine Turtle Expert Panel, constituted by the Western Australian Minister for the Environment for the Gorgon Project in Western Australia.
- ◆ Hugh Sweatman, Britta Schaffelke and Ray Berkelmans were participants in a Climate Change Incident Response Debrief Workshop held by the Great Barrier Reef Marine Park Authority to consider impacts of major floods and cyclones experienced during 2008-09 on the status of coral reefs.
- ◆ Janice Lough was one of 12 invited experts to assess progress and final year directions of a large US National Science Foundation project on reconstructing the Asian monsoon during a workshop “Tree rings and modelling of Asian Monsoon Dynamics” at the Lamont-Doherty Earth Observatory in New York.
- ◆ Julian Caley was invited onto the organising committee for an American Academy of Microbiology Colloquium titled A Rare Biosphere Workshop and funded by the Sloan Foundation.
- ◆ Simon Woodley is a member of GBRMPA Conservation, Heritage and Indigenous Partnerships Reef Advisory Committee.
- ◆ Christine Schoenberg is one of the listed taxonomic experts for sponges for the World Register of Marine Species.
- ◆ Lyndon Llewellyn is on the Research Working Group of the Queensland government Marine Stinger Advisory Committee.
- ◆ Ian Poiner is a board member of TropLinks, an initiative of the Queensland Government under its *Q-tropics: Queensland Tropical Expertise Strategy 2008-2012*, which seeks to stimulate jobs growth by building tropical knowledge industries.
- ◆ Julian Caley was a member of the Advisory Board for the Australian Biological Resources Study.
- ◆ Britta Schaffelke and Ray Berkelmans were part of a Fitzroy Basin Water Quality Targets Expert Panel for the Fitzroy Basin Association, an Integrated Catchment Management agency for the Fitzroy River which enabled the report “Assigning local water quality trigger values to coastal and marine assets”.
- ◆ Ray Berkelmans and Janice Lough are invited participants in an international group of coral reef scientists to produce science-based estimates of greenhouse gas trajectories that would provide an acceptably low probability of causing ‘dangerous anthropogenic interference’ in advance of the international negotiations to be held in Copenhagen in December, 2009.
- ◆ A number of AIMS research staff have been deemed “Expert Assessors of International Standing” and provide peer-review of grant applications for the Australian Research Council.

In addition, advice was shared through the following actions:

- ◆ Briefings were provided to Commonwealth and Queensland Ministers about the “Declining coral calcification on the Great Barrier Reef” paper in *Science* by Glenn De’ath, Katharina Fabricius and Janice Lough (January 2009).
- ◆ Peter Doherty and Hugh Sweatman participated in risk assessments for changes to the duration of reef fish spawning closures that were conducted by Primary Industries and Fisheries within the Queensland Department of Employment, Economic Development and Innovation.
- ◆ Mark Meekan and David Parry are members of the Ecosystem Research Group of the Darwin Harbour Advisory Committee.
- ◆ Britta Schaffelke provided advice to the Queensland Department of Environment and Resource Management as they developed an integrated paddock to reef monitoring program.
- ◆ Hugh Sweatman visited Kota Kinabalu at the invitation of the Malaysian government to provide advice to the Sabah Parks and Fisheries Department and several international NGOs about implementation of reef monitoring programs.
- ◆ Britta Schaffelke attended the Reef Rescue Decision Support Model Science Workshop, held by the Reef Rescue Taskforce of the Australian Government Land and Coasts Division, to assist in the Reef rescue investment decision process using a Multi Criteria Assessment (February 2009).
- ◆ David Parry was appointed to the Darwin City Council Environmental Management Planning Committee.

Other outreach

- ◆ The 2nd Australia-Japan Marine Science Forum was held at AIMS during October 2008. This workshop included representatives of AIMS, CSIRO, Geosciences Australia, James Cook University, GBRMPA, University of Sydney and senior scientific and management staff of the Japan Agency for Marine-Earth Science & Technology and the University of the Ryukyus.
- ◆ During the Coral Triangle Initiative workshop held in Townsville in November, 2008, many of the workshop delegates were hosted at the AIMS Cape Ferguson site.
- ◆ Distinguished visitors during the year included:
 - Her Excellency Ms Penelope Wensley, Governor of Queensland (October 2008)
 - Peter Beattie, Queensland Trade Commissioner to America and a delegation of north American biotechnology company representatives (October 2008)
 - Their Excellencies Mr Victor Samuel Ngele and Mr Charles Watson Lepani, High Commissioners of the Solomon Islands and Papua New Guinea, respectively (April 2009).
 - One of the Executive Directors of the Japan Science & Technology Agency and several of his staff (February 2009).
 - Several staff of the US House and Senate Science Appropriations Committee.
 - President of the University of New Caledonia and colleagues along with senior representatives of the New Caledonia government.
- ◆ CReefs Australia hosted two BHP Billiton employees on each of the three expeditions this year and BHP Billiton sponsored a Science Teachers Award where a teacher joined one of the expeditions.
- ◆ Submissions were provided with respect to:
 - the Draft National Adaptation Research Plan on Marine Biodiversity and Resources of the National Climate Change Adaptation Research Facility;

- the mid-term review of the Australia-India Strategic Research Fund within the Department of Innovation, Industry, Science and Research;
 - House of Representatives inquiry into climate change and environmental impacts on coastal communities;
 - Parliament of Australia House of Representatives Standing Committee on Industry, Science and Innovation inquiry into long-term forecasting by the Bureau of Meteorology;
 - Australian Academy of Sciences National Committee for Earth System Science (NCESS) planning for Decadal Strategic Plan for Australian Earth System Science; and
 - the Coral Reef Conservation Program of the US National Oceanic and Atmospheric Administration.
- ◆ AIMS continues to run its popular public tours at the Townsville site, made possible through the invaluable work of a team of committed volunteer guides. The Institute also facilitates specialised tour group visits. During the reporting period, AIMS hosted a total of 64 tour groups.

Research partnerships

AIMS made a strategic decision in 2004 to focus on increased science delivery through joint ventures, strategic alliances and significant collaborations. Investing AIMS resources in collaborative projects with willing partners increases the return yielded from every dollar expended. More importantly, it increases critical mass and broadens the skill base required to address the complex questions of sustainable use and protection of marine resources. In 2008-09, almost all of AIMS' scientific tasks received co-investment from partner organisations.

Joint ventures

AIMS and James Cook University created AIMS@JCU to facilitate infrastructure sharing and to provide opportunities for training postgraduate students in tropical marine sciences. AIMS@JCU is now in its fifth year and has affiliations with 116 researchers from both AIMS and JCU. It continues to foster joint research and student collaboration, providing scholarships to support five new PhD students and three Honours students in 2008-09. Travel support grants were also awarded to 14 students to attend conferences in their field as part of their training and development.

Two new Program Leaders were appointed in the past year. Professor Bette Willis became JCU's new Program Leader for "Stress in Tropical Marine Systems Program" with the departure of Dr Mark McCormick and Associate Professor Scott Smithers became JCU's new Program Leader for Coastal Processes and Modelling Program with the departure of Professor Michael Ridd.

Further details may be found at <http://aims.jcu.edu.au/AIMS-JCU/home.html>

The **ARC Centre of Excellence for Coral Reef Studies** was established in July 2005, arising from a partnership between James Cook University, AIMS, the Australian National University, the Great Barrier Reef Marine Park Authority and the University of Queensland. The Australian Research Council reviewed the Centre of Excellence in 2008 and approved an extension of funding of \$2.8 million each calendar year from 1 July 2010 to 2013, a total of \$9.8 million. The ARC review panel was impressed with the Centre's progress to date, particularly as a focal point for national and international research and the establishment of a strongly collaborative interdisciplinary team leading to high quality, relevant research outcomes. The Panel also applauded the Centre's focus on communications and application of research

outcomes to real world problems. AIMS is a partner in the Centre, our CEO is on the Advisory Board and three of our scientists are partner investigators (Drs Janice Lough, Madeleine van Oppen and Mark Meekan).

AIMS also co-invests in postdoctoral fellowship appointments in the fields of resource mapping and modelling as well as bioinformatics within the Centre. This partnership has resulted in numerous high profile collaborative manuscripts.

The Department of Environment, Water, Heritage and the Arts approached AIMS and the Centre to help plan and deliver a workshop in November 2008 for delegates from the Coral Triangle Initiative countries: Philippines, Malaysia, Indonesia, Timor Leste, Papua New Guinea, Solomon Islands. This workshop focused on management and conservation of coral reefs within the Coral Triangle (see Highlight p 21).

Further details may be found at <http://www.coralcoe.org.au/>

The Arafura Timor Research Facility (ATRF) is a joint venture between AIMS and the Australian National University (ANU), enabled by an Australian Government Major National Research Facility infrastructure grant. The ATRF was created to support world class scientific research into the resources and peoples of the Arafura and Timor seas region through the provision of infrastructure and the constructive engagement of national, Territory and State departments, industry sectors and overseas northern neighbours.

In 2008-09, AIMS refocused its research in the Northern Territory to concentrate upon the impacts of coastal development. Darwin Harbour is expected to be the centrepiece of this strategy and with the appointment of Professor David Parry, formerly of Charles Darwin University (CDU), AIMS has bolstered its skills in environmental chemistry and sustainable management of the marine impacts of coastal development. Professor Parry has intimate knowledge of the tropical Australia mining sector, a knowledge base he developed while managing the CDU's Tropical Futures: Mineral Program.

The ATRF is also home to Bioscience North Australia (BNA), a partnership between AIMS, CDU and the Northern Territory Government managed by the BNA Advisory Group with representatives from each of the partners. BNA is a facility dedicated to research training and consultancy services in molecular and environmental ecology, biodiversity assessment, phylogeny and diagnostics.

Further details at <http://www.atrf.org.au/> and <http://www.cdu.edu.au/ehs/bna/index.html>

Western Australian Marine Science Institution (WAMSI). This joint venture between AIMS, CSIRO, the Bureau of Meteorology, the Western Australian Government Departments of Environment and Conservation, Fisheries, and Industry and Resources, the WA Museum, Perth universities and the Western Australian Global Ocean Observing Systems (WAGOOS) was established in May 2007 with a \$21 million grant from the Western Australian government. Joint venture partners provided a further investment of more than \$80 million over five years. WAMSI conducts marine science to underpin the conservation and sustainable management of Western Australia's marine environment and resources. The AIMS CEO is a member of the WAMSI Board and the WAMSI R&D Committee that approves and oversees the research program. AIMS invests its expertise and knowledge in coral reef systems and oceanography to WAMSI,

along with access to RV *Solander*. As part of the WAMSI program, researchers from AIMS are collaborating with the Western Australian Department of Environment and Conservation to establish long-term monitoring sites within the Ningaloo Marine Park to measure recruitment of larval coral and fish. An electronic tagging program for whale sharks has also been realised within WAMSI as a means to reveal their migratory paths through the Ningaloo Marine Park. This project is a collaboration between AIMS, Apache Energy, CSIRO and the US National Oceanic and Atmospheric Administration (NOAA).

Further details can be found at <http://www.wamsi.org.au/>

Strategic alliances

Strategic alliances enable AIMS to expand its capability to deliver strategic research. Major alliances during the reporting period were:

- ◆ **CReefs**, a collaboration between AIMS, Scripps Institution of Oceanography and the NOAA, was formed to conduct a global census of coral reefs. CReefs Australia is the coral reef component of the Census of Marine Life and focuses on understudied taxonomic groups. It is made up of a consortium of scientists from the Australian Museum, the Museum and Art Gallery of the Northern Territory, Museum Victoria, the Queensland Museum, the South Australian Museum and the Western Australian Museum, as well as the University of Adelaide, Murdoch University, the South Australian Herbarium and the Smithsonian Institution. CReefs Australia has completed five expeditions to its study sites at Lizard and Heron Islands on the Great Barrier Reef and Ningaloo Reef off the Western Australian coast. CReefs funds have been used to leverage matching funds from the Australian Biological Resources Study (ABRS), creating a funding pool of about \$400,000 per annum. In 2009, research grants from this pool have been awarded to five taxonomic projects.
- ◆ **The Great Barrier Reef Observing System (GBROOS)** is a multidisciplinary infrastructure project led by AIMS on behalf of a consortium of agencies including JCU, Great Barrier Reef Island Research Stations, University of Melbourne and CSIRO. The Great Barrier Reef marine tourism industry is participating by including ship board sensors on some of its vessels. Funding comes from the Australian and Queensland governments and is part of the Integrated Marine Observing System (IMOS), a national collaborative program managed by the University of Tasmania to observe the oceans around Australia. GBROOS will use a powerful blend of technologies to transmit data from multiple sensors along the Great Barrier Reef from Cooktown to Gladstone. IMOS as a whole was reviewed in 2008 and the reviewing panel noted that “GBROOS is well organised” and “is the exemplar of what IMOS had in mind for the Nodes” within IMOS. The Commonwealth Budget for 2009-10 delivered an extra \$52 million for capital expenditure to expand the IMOS network. AIMS plans to build on the GBROOS model to expand ocean observing capacity across northern Australia.
- ◆ In addition to leading GBROOS, AIMS is a collaborator in another IMOS facility: the **Australian Acoustic Tagging and Monitoring System (AATAMS)**, which is administered by the Sydney Institute of Marine Science and Macquarie University. On behalf of the Facility, AIMS deployed 40 acoustic noise receivers in cross-shelf lines across narrow regions of the Ningaloo Marine Park to develop the Ningaloo Reef Environmental Tracking Array (NRETA). In June 2009, AIMS’ RV *Solander* was used to service this array, which is the largest offshore acoustic array in Australian waters. The 40 acoustic receivers were recovered, serviced and redeployed in a four-day period. The data from these acoustic curtains have revealed valuable insight into the

longshore movements of manta rays, black tip whaler sharks and reef fish as they swam between fished and reserve areas.

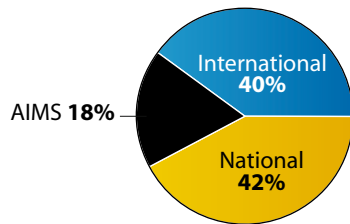
- ◆ The Marine Monitoring Program (MMP) of the Reef Water Quality Protection Plan (**Reef Plan**) is now funded by the Commonwealth Government's new Reef Rescue initiative and contracted through the Reef and Rainforest Research Centre. AIMS has continued to deliver water quality and inshore coral reef monitoring components to the Reef Rescue MMP and successfully completed the fourth year of the Program. The MMP's objective is to support the assessment of the effectiveness of the Reef Plan, which has the goal of halting and reversing the decline in the quality of water entering the reef within 10 years. AIMS' inshore monitoring has created a sound baseline to measure future changes against, continuously improved monitoring techniques and advanced the understanding of responses of coral reefs to water quality.
- ◆ The **Marine and Tropical Sciences Research Facility** is a multi-agency research program coordinated by the Reef and Rainforest Research Centre Limited (RRRC) under the Commonwealth Environment Research Facilities program of the Department of Environment, Water, Heritage and the Arts. Its aim is to ensure the health of North Queensland's publicly owned environmental assets like the Great Barrier Reef and its catchments, tropical rainforests including the Wet Tropics World Heritage Area and the Torres Strait by generating world-class research and sharing knowledge between research providers and users of that knowledge. MTSRF enters its fourth and final year of funding in 2009-10. Projects are therefore soon due to be finalised and the last year will emphasise completion activities for all tasks. All partners within the MTSRF partnership are working towards an extension of the MTSRF program beyond its current life.
- ◆ The **Marine Biodiversity Research Hub** is another CERF program that is a multi-agency research program involving the University of Tasmania, CSIRO, Geoscience Australia, AIMS and Museum Victoria. The aim of the Hub is to analyse the patterns and dynamics of marine biodiversity to determine the appropriate units and models for effectively predicting Australia's marine biodiversity. It will develop and deliver the tools needed to manage Australia's marine biodiversity. This program is due to end in mid-2010, and the Hub partners have begun planning a case for continuation.
- ◆ AIMS continues to co-ordinate research on seawater temperature and coral bleaching events as part of a consortium with NOAA, GBRMPA and the University of Queensland. Coral bleaching is an important indicator of environmental stress and is predicted to increase as a result of climate change. Robust monitoring coupled with rapid response to coral bleaching events to document bleaching extent and severity has improved our understanding of the link between climate change and this phenomenon as well as the ability of coral populations to survive bleaching.

Number of collaborations

Collaboration is central to our organisational culture and in magnifying our science capabilities and capacity. This is apparent from the fact that less than 20 per cent of our 2008 publications were authored solely by AIMS staff. Of the remaining collaborative peer-reviewed papers, 42 per cent recognised co-authors at other Australian research organisation while 40 per cent involved international colleagues.

Collaborations are critical not only for our peer-reviewed scholarly publications; nearly one-third of our technical reports submitted to clients were also co-authored with collaborators at other organisations.

AIMS has 110 active collaborations with 89 organisations from 15 countries. These collaborations operate within 12 countries. While the majority of these collaborations were within Australia, 41 were with colleagues overseas.



Collaborative scholarly publications 2008



Contracts successfully completed

During the reporting period, AIMS successfully completed 23 contracts and commenced 24 new research contracts. The Institute provided 145 milestone 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.

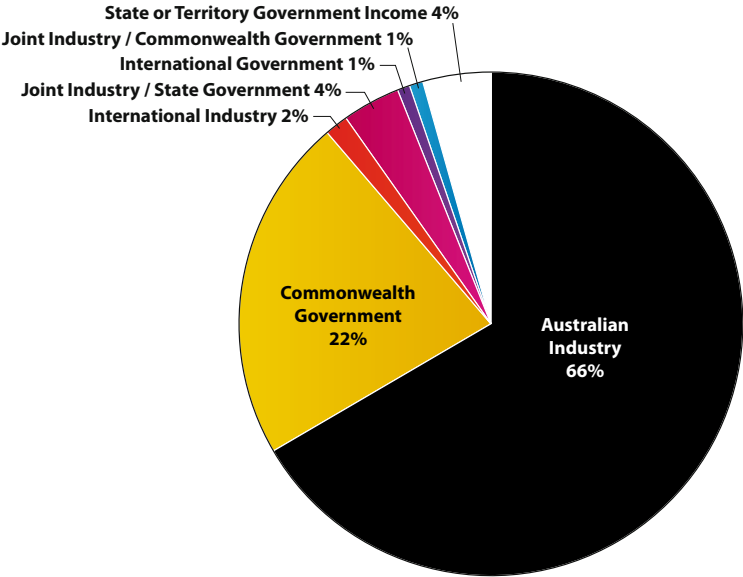
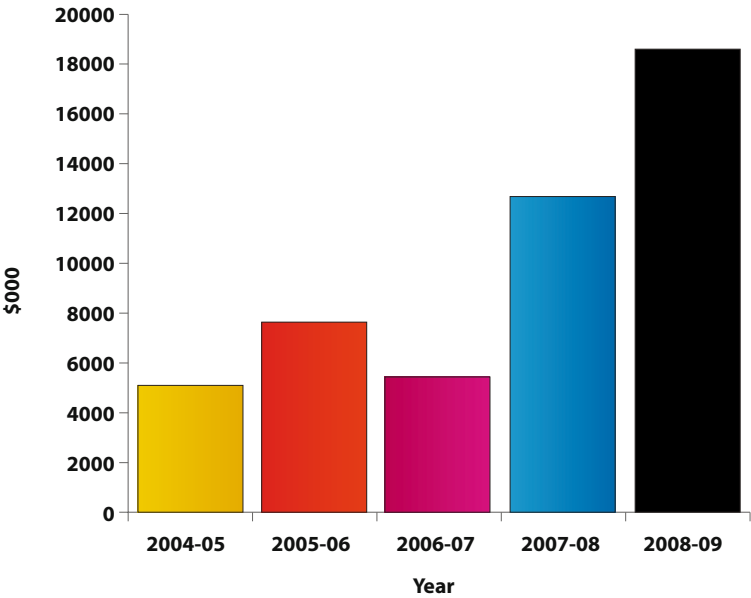
RESEARCH SERVICES, SPECIALISED CONSULTING

AIMS performs strategic basic research to provide the means to solve or manage existing and future problems involving tropical marine environments. AIMS does little tactical research and does not compete in the commercial consulting sector, only undertaking fee-for-service research when commercial providers do not exist because of the scale of the problem and when the research needs fall within our chosen strategic directions and capabilities. Our funding base includes substantial income from other organisations for co-investment activities of mutual interest. This enables AIMS to maintain the research portfolio needed for informed decision-making by the public and private sector when sustainably developing Australian tropical marine resources.

REVENUE FROM CO-INVESTMENT

AIMS continues to experience growth in co-invested funding. We realised \$18.32 million for 2008-09, representing 37 per cent of AIMS’ total revenue for the year, up from \$13.25 million (29 per cent) last year. A large proportion of this came from the Scott Reef Research Project being undertaken by AIMS with funding from the Browse Basin Joint Venture led by Woodside Energy .

The first figure below shows the growth in AIMS’ external revenue compared with the previous four years. The second figure shows the breakdown of government and industry funding for the reporting period. The amount of co-investment we received from Australian industry has greatly increased and reflects a continued focus on diversifying our revenue sources to enable future growth and buffer ourselves against major changes in the science investment environment.



ADOPTION BY USERS OF PRACTICES, INSTRUMENTS AND PROCESSES

- ◆ Approval was given for the establishment of a commercial sponge farm near Masig Island in the Torres Strait. This outcome is the result of AIMS research that underpinned the technical and commercial feasibility and assessed environmental risks associated with such a farm.
- ◆ Katharina Fabricius was a contributor to the Scientific Consensus Statement on Water Quality in the Great Barrier Reef, which was launched by Queensland Premier Anna Bligh at a Reef Summit at the State Parliament House. The Consensus Statement was based on a comprehensive discussion paper prepared by a Scientific Taskforce that reviewed and updated the 2003 scientific background document to the Reef Water Quality Protection Plan to include results of more recently published and peer-reviewed articles.
- ◆ David Williams facilitated workshops on the use of Acoustic Doppler Current Profilers for the measurement of river flows and sediment transport for the Queensland Department of Environment and Resource Management (DERM) so that they can use the technology to better define sediment loads in rivers flowing to both the east coast and Gulf regions.
- ◆ Andrew Negri and Britta Schaffelke met with DuPont staff to present the latest research results on herbicide toxicology and its impacts on the Great Barrier Reef.
- ◆ Britta Schaffelke, Katharina Fabricius, Miles Furnas and David McKinnon attended the Water Quality Research Directions workshop of the Reef and Rainforest Research Centre to develop an overarching framework for water quality future research.
- ◆ David McKinnon reported results from aquaculture and environment studies conducted with ACIAR and Bluewater Barramundi projects to the Western Australian Department of Fisheries to assist them in their decision-making with respect to aquaculture development in that State.
- ◆ David McKinnon, Lindsay Trott and Britta Schaffelke attended a workshop with Queensland agencies and industry representatives to discuss environmental impacts of sea cage aquaculture, focusing on AIMS results from a project with Bluewater Barramundi. Recommendations for future monitoring for the industry were provided.
- ◆ AIMS is developing, with CSIRO Marine and Atmospheric Research and the eMII component of IMOS, a standardised toolkit for the processing of marine instrument data. This includes the design of deployment databases, metadata and data output formats. The toolkit will be made freely available to the marine community.
- ◆ The Smart Environmental Monitoring and Analysis Technologies (SEMAT) project, run by the University of Queensland in Moreton Bay, has adopted the AIMS GBROOS sensor network communications systems and data back-ends, to leverage off the work successfully completed by the GBROOS project allowing them to invest more in the sensor research itself.
- ◆ The database schema or design developed by the AIMS Data Centre to deal with the moorings and sensor data is being adopted by IMOS and by other parts of the marine community including the International Long-Term Ecological Research (ILTER) group working at Moorea.
- ◆ The AIMS Metadata System is now available to the public, with hundreds of metadata records available for searching. Our metadata system also forms a node in a national network of metadata systems as part of the BlueNet project.
- ◆ As part of the Great Barrier Reef Ocean Observing System and the Facility for Automated Intelligent Monitoring of Marine Systems, a real time sensor data management system along with data visualisation tools and online web services were developed to make the data publicly available.

- ◆ The AIMS satellite receiving station is contributing to improved weather forecasting to the Asia-Pacific region through the timely provision of vertical soundings of the atmosphere from Advanced TIROS Operational Vertical Sounder aboard the NOAA AVHRR series of polar orbiting satellites. The data provide critical measurements of atmospheric temperature, water vapour profiles and total ozone content. Data are collected at AIMS and retransmitted through the Bureau of Meteorology in Melbourne.
- ◆ Automatic weather stations and temperature loggers along the Great Barrier Reef provide data to numerous external parties through the AIMS Data Centre.
- ◆ Data from our automatic weather stations located throughout the Great Barrier Reef are not only accessible to the public-at-large, but an overview of trends and events is provided to the Commonwealth Department of Environment, Water, Heritage and the Arts.
- ◆ Since the new AIMS website was launched in 2008, visitor numbers to our data products have increased from 5,000 to 16,000 visitors per month

CONTRIBUTION TO AUSTRALIA'S RESEARCH

FUTURE THROUGH TEACHING AND TRAINING

AIMS has many links with Australian universities ranging from institutional arrangements to peer-to-peer collaborations. In 2008-09, 15 AIMS staff held adjunct appointments at James Cook University, the University of Queensland, University of Western Australia and Charles Darwin University. Most of these adjunct positions reflect a large personal contribution to postgraduate supervision, so that collectively AIMS is a significant provider of research training in the marine sciences.

During the reporting period, a total of 89 postgraduate students carried out research in association with AIMS; 44 at AIMS and 45 externally. In this time, a total of 10 theses were awarded, five to students at AIMS and five to external students. There were 14 occupational trainees.

| | 2005-06 | 2006-07 | 2007-08 | 2008-09 |
|--|---------|---------|---------|---------|
| AIMS staff enrolled in postgraduate studies | 6 | 8 | 7 | 6 |
| Students working at AIMS (Townsville) supervised by AIMS staff | 34 | 34 | 38 | 44 |
| Students working externally supervised by AIMS staff | 25 | 25 | 38 | 45 |
| Occupational trainees (Australia and overseas) | 17 | 13 | 14 | 14 |

In addition to a large number of research students, AIMS has committed to a target of having at least 10 postdoctoral scientists associated with its research programs. During 2008-09, AIMS supported 14 of these early career researchers. These postdoctoral positions are funded wholly by AIMS or by partnering with entities such as the University of Queensland, University of Western Australia, Charles Darwin University, the ARC Centre of Excellence, CERF Marine Biodiversity Hub and AIMS@JCU. Other postdoctoral positions were funded under Queensland government Smart State funding programs.

MILESTONE COMPLETION

AIMS maintains a centralised Milestone Reporting System to track progress of projects. Milestones are agreed between AIMS and external clients and partners. Potential delays are identified early to ensure measures such as resource reallocation can be implemented to

maximise likelihood of timely delivery. If all reasonable efforts have been undertaken and delay will still result beyond the control of all parties concerned, the milestone is renegotiated with external clients and partners.

During the reporting year, over 92 per cent of our milestones were completed as contracted. The remaining milestones were delayed by bad weather, infrastructure constraints not under staff control, and failure of collaborators and/or suppliers to deliver on schedule. In all cases, acceptable alternative arrangements were successfully negotiated with the external party.

POLICY INPUT

AIMS continually provides strategic input to policy development directly by submission to key reviews and indirectly through provision of expert advice. The latter is facilitated through effective networks with state and federal regulatory bodies and membership of key committees and working groups. As a portfolio agency, we are often asked for advice on a range of matters forwarded by our Department.

Some examples of policy input during the reporting period:

- ◆ preparation of the OPSAG document "A Marine Nation: National Framework for Marine Research and Innovation". AIMS CEO Ian Poiner was a member of the steering committee that formulated the document;
- ◆ the Draft National Adaptation Research Plan on Marine Biodiversity and Resources of the National Climate Change Adaptation Research Facility;
- ◆ Mid-Program Consultation Regarding the Australia-India Strategic Research Fund within the Department of Innovation, Industry, Science and Research;
- ◆ House of Representatives inquiry into climate change and environmental impacts on coastal communities;
- ◆ Parliament of Australia House of Representatives Standing Committee on Industry, Science and Innovation inquiry into long-term forecasting by the Bureau of Meteorology; and
- ◆ Australian Academy of Sciences National Committee for Earth System Science (NCESS) planning for Decadal Strategic Plan for Australian Earth System Science.

In addition, individuals provided expert advice on important matters requiring professional and technical expertise (see Expert Committees) with strong examples in the areas of climate change impacts, access and benefit sharing arrangements for marine genetic resources, biosecurity and fisheries management arrangements.

PARTNER AND CLIENT FEEDBACK

AIMS proactively seeks feedback from research partners and contractual clients to identify opportunities for improved performance and greater science delivery. Close engagement between project managers and clients and collaborators identifies issues enabling us to reinforce successful effort and rectify problems. Feedback to date is mostly positive. Our expanded investment in Perth and Darwin is a tangible demonstration of our response to feedback by stakeholders and users.

OPERATIONAL EFFICIENCY (KPG EFFECTIVE USE OF RESOURCES)

During the year AIMS maintained its commitment to continuous improvement in the delivery of its research program. This included ongoing effort in developing electronic systems to

enhance management processes and provide seamless support across our three geographically dispersed locations of Townsville, Darwin and Perth.

During 2008, the Australian National Audit Office assessed the effectiveness of our administration of co-invested research by reviewing our:

- ◆ policies and guidelines for the approval of research;
- ◆ project management systems and structures; and
- ◆ reporting against its research objectives.

Overall, the ANAO concluded that AIMS' administration of its co-investment research program is effective and utilised a range of sound project management techniques to manage co-investment research projects. This includes the implementation of project approval processes, project plans, financial controls and clear monitoring and reporting arrangements. However, areas for improvement were identified and AIMS has already implemented changes and new systems in response to the report.

ENHANCE CORE CAPABILITIES (KPG ORGANISATIONAL GROWTH)

During this research plan, AIMS has transformed its performance management mechanism into an Annual Performance Agreement (APA) process. The modified process assists in identification of any training or additional resources needed to achieve agreed work objectives. Development of a capability matrix to support workforce planning for medium to long-term skill set requirements and succession planning moved forward during the reporting period.

DEVELOP STAFF (KPG ORGANISATIONAL GROWTH)

AIMS is committed to staff development to support effective delivery of its research program and associated activities. During 2008/09 most of AIMS' senior managers have undertaken a leadership training and development program with a view to implementing this training to the broader AIMS staff.

HEALTH, SAFETY AND THE ENVIRONMENT (KPG HEALTH, SAFETY AND ENVIRONMENTAL PERFORMANCE)

OH&S

AIMS continues to implement the AIMS HSE Management Plan for the Scott Reef Research Project (SRRP) and we have applied many of the improvements and achievements from the SRRP throughout AIMS. This plan aligns AIMS' field practices and standards with the offshore oil and gas industry. The HSE performance has been exemplary, with vast improvements in operations resulting in no recordable or high potential incidents. There has also been an increased emphasis on laboratory safety to ensure we achieve the highest possible levels of safety in our scientific operations. The overarching motto is "safe science is good science".

A focus has also included the consultative development and implementation of the AIMS Health & Safety Management Arrangement (HSMA) providing a clear framework by which AIMS manages health and safety, articulating associated standards, roles, responsibilities and accountabilities.

A detailed OH&S report is provided on pages 85-86.

Environment

AIMS has an ongoing program to monitor energy and water usage and actively seek mechanisms to reduce the energy needs of its operations. During the reporting period, a level 3 energy audit and carbon account audit were completed to support planning for the next five years. These formed the basis for the energy reduction and other programs that will now be expedited due to the Government's Nation Building Funding announced in the May Budget, refer page 33.

Further details relating to environment, energy usage and water are provided on page 87.

ROLE, LEGISLATION AND MINISTER

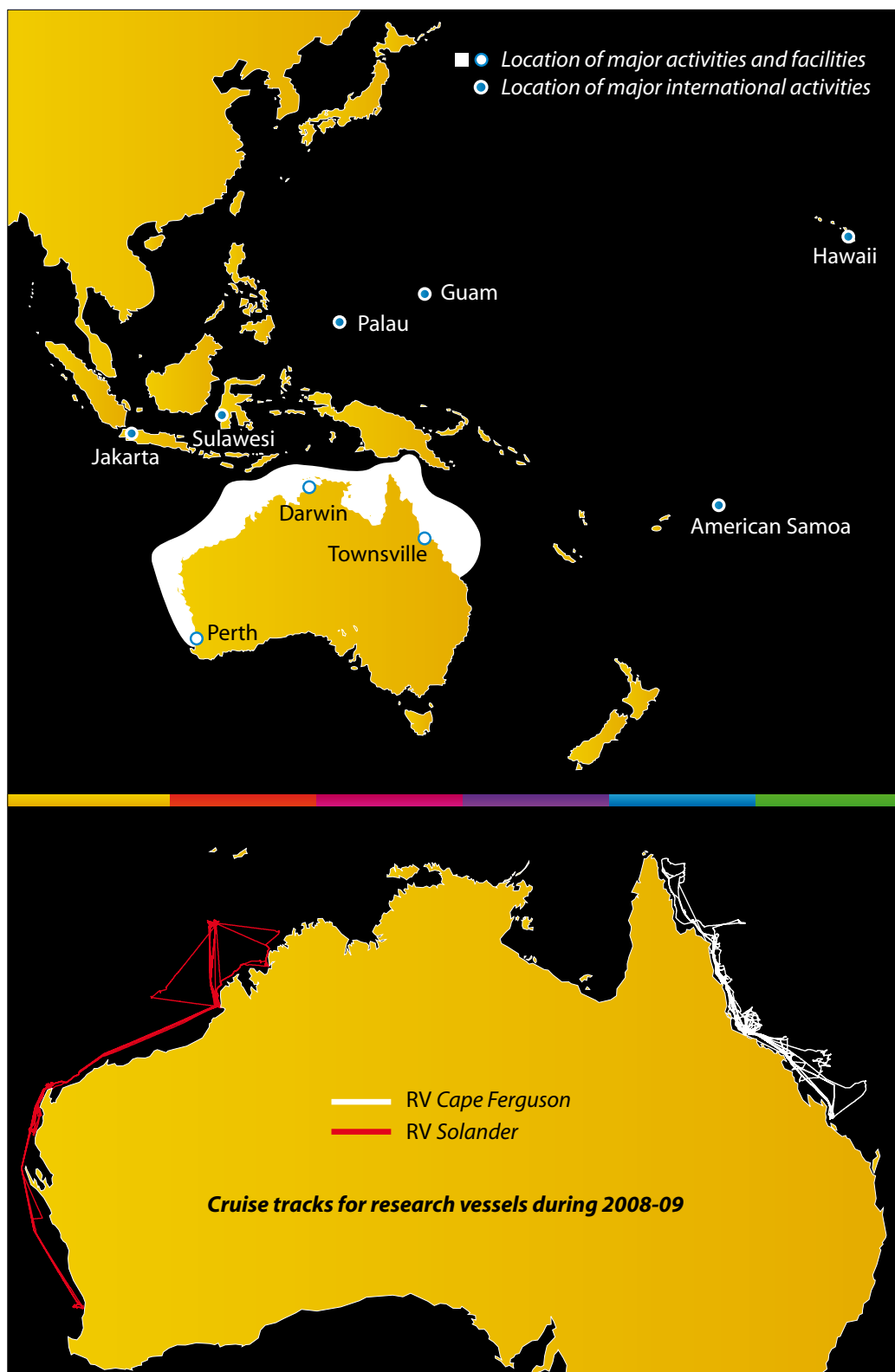


Senator the Hon Kim Carr, Minister for Innovation, Industry, Science and Research at the launch of the AIMS Index of Marine Industry, Parliament House Canberra, November 2008.

AIMS' role is to carry out research and development in marine science and technology and to encourage and facilitate the application of the results of these activities.

The Australian Institute of Marine Science is a Commonwealth Statutory Authority established by the *Australian Institute of Marine Science Act 1972*. The *Commonwealth Authorities and Companies Act 1997* sets out reporting, accountability and other rules for AIMS operations.

AIMS' functions and powers are set out in Sections 9 and 10 of the AIMS Act (see Appendix 1, p 137-138). The Minister responsible is Senator the Hon Kim Carr, Minister for Innovation, Industry, Science and Research.



STAFFING AND STRUCTURE



Bluewater Barramundi at Cardwell, Queensland.

The total number of staff employed by the Institute at 30 June 2009 was 193 (by head count). When taking into account hours worked over the reporting period, the full-time equivalent value is 182.7. All members of staff are employed under the *Australian Institute of Marine Science Act 1972 (amended 2002)*. In addition to those paid from Australian Government appropriation, the Institute periodically employs staff to work on projects funded from external sources.

Positive growth in staff numbers in 2008-2009 has been at AIMS WA where work in partnership with Woodside Energy has seen staff numbers increase from 17 to 33.

The following tables provide a breakdown of staff numbers and EEO status by head count as at 30 June 2009 (prior year figures have been bracketed):

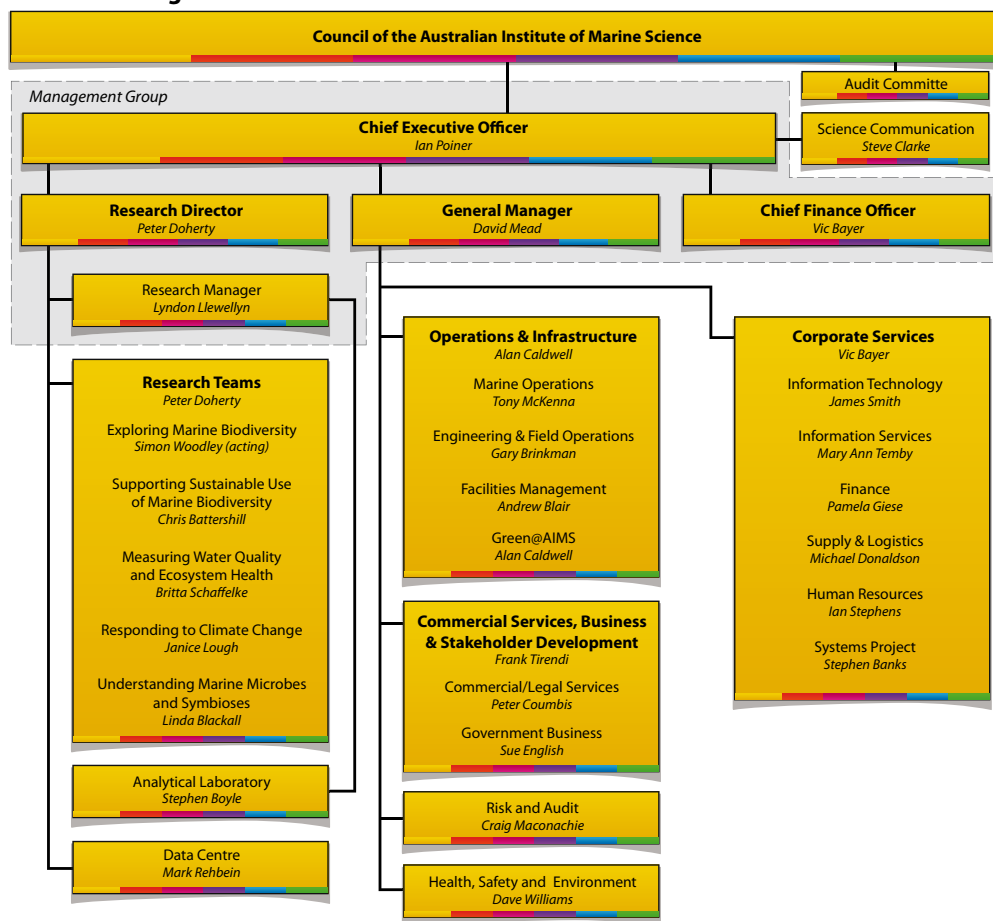
| | Female | Male | Total |
|---|---------|-----------|-----------|
| Research Scientists | (10) 11 | (23) 26 | (33) 37 |
| Research Projects | (28) 25 | (44) 42 | (72) 67 |
| Other (Research and Corporate Services) | (31) 36 | (44) 53 | (75) 89 |
| Total Staff | (69) 72 | (101) 121 | (180) 193 |

| | |
|---------------------------------------|---------------|
| Aboriginal and Torres Strait Islander | (1.7%) 0.5% |
| Non English speaking Background | (9.4%) 11.8% |
| Staff with Disability | (2.2%) 2.0% |
| Women | (38.9%) 37.9% |

The work of the research staff is supported by a variety of professional research support staff skilled in data management, commercial services, intellectual property 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 Chief Executive Officer, General Manager, Research Director, Chief Finance Officer and Research Manager.

Organisational structure of the Australian Institute of Marine Science



CORPORATE GOVERNANCE



The AIMS Council.

AIMS has in place a comprehensive system of corporate governance practices designed to provide control, disclosure and accountability for the Institute's activities.

RESPONSIBLE MINISTER

The Institute meets its responsibilities to the Australian Government through the Minister for Innovation, Industry, Science and Research.

Under Section 28 of the CAC Act, the Minister may, after consultation with the Council, notify the Council of a general policy of the Australian Government that is to apply to AIMS.

THE COUNCIL

Under the AIMS Act, the Council (or Board) of the Institute comprises a non-executive chairperson, the Institute's CEO and five non-executive members.

Council members are appointed by the Governor General, at least three members must possess scientific qualifications and one member is nominated by James Cook University. Appointments can be up to five years and reappointment is permissible. 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. The CEO is an *ex officio* member of Council.

The CEO is appointed on the recommendation of the Council for a period not exceeding seven years and is eligible for re-appointment.

ROLE OF THE COUNCIL

AIMS Council sets the Institute's key objectives and research strategies. Progress against the four-year Research Plan 2007-2011 is reported to the Council, on a continuous basis, by the Institute. The Minister is also provided with advice on developments of significance, as appropriate.

The Commonwealth Authorities and Companies Act 1997 (CAC Act) requires the Council to comply with certain accountability and corporate governance principles, including:

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

From October 2007, AIMS has been required to complete an Annual Compliance Report to the Government regarding the Institute's compliance with the CAC Act and its financial sustainability. Internal procedures are in place to support this declaration.

During 2008-2009 all CAC Act requirements were met.

COUNCIL MEMBERS

Dr Ian Gould BSc (Hons), PhD (Geology), FAusIMM, FTSE, CompleAust

Term as Chairman: 01/01/2005 – 31/12/2009

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 involvement with environmental matters. He has over 40 years' experience in the minerals industry, mainly with the Rio Tinto Group and Normandy Mining Ltd, from which he retired as managing director. He is currently Chancellor of the University of South Australia and Chair of St Andrews Hospital in Adelaide, the CSIRO Minerals and Energy Sector Advisory Committee and the South Australian Minerals and Petroleum Expert Group (SAMPEG).

Dr Gould is a member of the Royal Flying Doctor Service of Australia (Central Operations) Board, and the South Australian Resources Industry and Economic Development Boards and Premier's Science and Research Council.

Mr John Grace BSc (Applied Chemistry), FTSE, FAICD

Term as Council Member: 16/12/2004 – 15/12/2009

Mr Grace has worked for 38 years in the biotechnology industry, 20 years of which he was a CEO. 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. He operates a consulting business in biotechnology, iBIO Pty Ltd, primarily with clients involved in the commercialising of research. He is Vice President of the Academy of Technological Sciences and Engineering and Chairman of ITEK Pty Ltd, the research commercialisation company of the University of South Australia. He Chairs the Victorian government's VSA Investment fund.

Mr Grace is a past member of the Australian Research Council. He was formerly a member of the Victorian Premier's Knowledge Innovation Science and Engineering Task Force, a member of the Industry Research and Development Board and President/Director of the Australian Biotechnology Association.

Ms Elizabeth Montano BA LLB.

Term as Council Member: 16/12/2004 – 15/12/2009

Ms Montano has worked in senior positions in both the private and public sectors for over 25 years. She is currently a member of the Council and Audit Committee of AIMS, a Commissioner of the Australian Fisheries Management Authority and conducts a corporate

advisory business advising on corporate strategy and risk. She has held various non-executive positions, including Chairman of the Board of Management of Centrelink, Chair of Centrelink's audit and risk committee, Strategic Adviser to the Chief Federal Magistrate, Federal Magistrates Court of Australia, independent member of the Executive Management Board and Strategic Leadership Group of the Australian Federal Police and independent member of its Security and Audit Committee, Adviser to an Asian Development Bank technical assistance program in the Philippines and 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 Organisation for Economic Co-operation and Development (OECD) based Financial Action Task Force on Money Laundering; a member of the board of CrimTrac; a member of the Heads of Commonwealth Operational 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 fundraising regulatory policy with the Australian Securities Commission (now the Australian Securities and Investments Commission) and a senior banking and finance consultant and solicitor with Mallesons Stephen Jaques.

Mr Nicholas Mathiou B Com (Hons), LLB, MMktg

Term as Council Member: 01/09/2005 – 31/08/2010

Mr Mathiou is the Director of Griffith Enterprise, the Office that assists Griffith University (Queensland, Australia) to commercially exploit its expertise and intellectual property. He is responsible for its overall direction and strategic management.

He has over 20 years of professional investment, corporate advisory and new business development experience. Before joining Griffith Enterprise, Mr Mathiou co-founded and directed a listed company specialising in venture capital investment in, and creation of, biomedical ventures. He was jointly responsible for all investment and divestment decisions, the strategic direction of the company and its operating and financial management. He also held senior non-executive positions in portfolio companies.

In prior executive roles for multi-national companies, Mr Mathiou provided advice to senior management and executives regarding acquisition and investment appraisals; corporate funding and implementation; business valuations; strategy development and business planning; commercialisation strategies and planning; and corporate governance and general operating and financial management.

He is a Fellow of the Financial Services Institute of Australasia, Member of Australian Institute of Company Directors, a barrister of the Supreme Court of Queensland, a barrister and solicitor of the Supreme Court of Victoria, an Associate of Chartered Secretaries Australia and an Associate member of the CPA Australia.

Professor Sandra Harding BSc (Hons), M.Pub.Admin, PhD, FAICD, FAIM

Term as Council Member: 10/05/2007 – 09/05/2010

Professor Sandra Harding is Vice-Chancellor and President of James Cook University. She is the Chair of Innovative Research Universities (IRU) Australia and a member of the Universities Australia Board. She is also a Board Member of Townsville Enterprise Ltd, the Australian Institute for Commercialisation, Advance Cairns and the Business/Higher Education Round Table. She is also non-executive Director of the Global Foundation for Management Education Ltd (Montreal). Professor Harding belongs to a number of professional and scholarly societies, including the Australian Institute of Management, the Australian Institute of Company Directors, The Australian Sociological Association, the American Sociological Association, and the Academy of Management (USA).

Dr Brian Fisher AO, PSM, BscAgr (Hons 1), PhD

Term as Council Member: 26/09/2007 – 25/09/2010

Dr Fisher is one of Australia's most respected advisers on climate change, emissions trading and the economic impact of current and future climate and energy policies. He is a well known commentator on Australian agricultural, minerals and energy commodities and previously held the position of Executive Director of the Australian Bureau of Agricultural and Resource Economics (ABARE). He was first appointed Executive Director of ABARE in 1988. Brian left the Bureau briefly for a senior position in the Federal Department of Primary Industries and Energy before returning to ABARE as Executive Director in 1995.

Before heading up ABARE, Brian was Professor of Agricultural Economics at the University of Sydney and became Dean of the Faculty of Agriculture at the University in 1987. He was appointed Adjunct Professor of Sustainable Resources Development in 2003.

Concurrently with his position at ABARE, in 1993 Brian was appointed one of the experts completing the socioeconomic assessment of climate change for the United Nation's Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report. He was subsequently engaged as one of the experts completing the IPCC's Third and Fourth Assessment Reports. He played an integral role in the international climate change negotiations as economic adviser to Australia's negotiating team in the lead up to, and at, the third Conference of the Parties in Kyoto. He again fulfilled that role at the fourth, fifth and sixth Conferences of the Parties of the UNFCCC. Brian is approached by government departments and private enterprises to advise on climate change, emissions trading and the economic impact of current and future climate and energy policies.

Dr Fisher has been the government board member on a number of statutory corporations and has published over 260 papers and monographs. In addition to his position with ABARE he was an Associate Commissioner of the Productivity Commission and the Chairman of the Prime Minister's Exports and Infrastructure Taskforce. He received the Farrer Memorial Medal in August 1994, became a fellow of the Academy of Social Sciences in Australia in November 1995, was awarded the Public Service Medal in 2002 and received an Order of Australia in the Queen's Birthday Honours List in 2007. He holds a PhD in agricultural economics from the University of Sydney.

Dr Ian R. Poiner BSc (Hon), PhD, FTSE*Term as Council Member: 12/07/2004 – 11/07/2011*

Dr Ian Poiner is the Chief Executive Officer of AIMS. Dr Poiner has significant experience in strategic development and planning of science, both as a practising scientist and at the organisational level. This is reflected in his successful large-scale, multi-disciplinary research projects and his 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 those in Australia's northern Great Barrier Reef, Torres Strait and the Gulf of Carpentaria. He has also worked in Jamaica, Papua New Guinea and Southeast Asia. Dr Poiner serves on a number of national and international committees. He is the Chair of the International Scientific Steering Committee of the Census of Marine Life, a 10-year international research program to assess and explain the diversity, distribution and abundance of marine organisms throughout the world's oceans. As CEO of AIMS, he is responsible for managing the day-to-day affairs of the Institute.

Council attendance

| | 18 Aug 08 Teleconference | 22 Sep 08 Canberra | 8 Dec 08 Townsville | 9-10 Mar 09 Townsville | 22-23 Jun 09 Townsville |
|----------------|-----------------------------|-----------------------|------------------------|---------------------------|----------------------------|
| Dr I Gould | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mr J Grace | X | ✓ | ✓ | ✓ | ✓ |
| Ms E Montano | X | ✓ | ✓ | ✓ | ✓ |
| Mr N Mathiou | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prof S Harding | ✓ | X | ✓ | ✓ | ✓ |
| Dr B Fisher | ✓ | ✓ | ✓ | ✓ | ✓ |
| Dr I Poiner | ✓ | ✓ | ✓ | ✓ | ✓ |

AUDIT COMMITTEE

The Audit Committee is a formal sub-committee of the Council and it meets quarterly or as required. The Audit Committee members during the reporting period were Mr Nicholas Mathiou (Chair), Ms Elizabeth Montano and Mr Roy Peterson. The Chief Executive Officer, the Chief Finance Officer, representatives of the Australian National Audit Office and Internal Auditor and External Auditor attend all meetings, or relevant parts of all meetings, by invitation.

In accordance with best practice, all Council members receive copies of Audit Committee Agenda and Meeting minutes, and can attend meetings as a right.

The Audit Committee is responsible for providing independent assurance and assistance to Council in the following areas:

- ◆ Financial Risk Management
- ◆ Control Framework
- ◆ External Accountability
- ◆ Legislative Compliance
- ◆ Internal Audit
- ◆ External Audit

Meetings – Audit Committee

| Member | Held | Attended |
|---|------|----------|
| Mr Nicholas Mathiou (Council member and Chairman) | 5 | 5 |
| Ms Elizabeth Montano (Council member) | 5 | 5 |
| Mr Roy Peterson (External member) | 5 | 5 |
| Invitees | | |
| Dr Ian Poiner (Chief Executive Officer) | 5 | 5 |
| Mr John Zabala (Internal Auditor) | 5 | 4 |
| Mr Victor Bayer (Chief Finance Officer) | 5 | 5 |
| Ms P Dash (Australian National Audit Office) | 5 | 1 |
| Ms C Sturgess (HLB Mann Judd) | 5 | 1 |

FRAUD CONTROL

AIMS remains committed to the Commonwealth Fraud Control Guidelines as set out by the Attorney-General's Department, Criminal Justice Division. The Institute has reported its 2008-2009 fraud data to the Australian Institute of Criminology and has carried out a fraud risk assessment in preparation for a review of its Fraud Control Plan by December 2009.

FINANCIAL RISK MANAGEMENT FRAMEWORK

The Audit Committee has responsibility for the review of the implementation and the development of the Institute's financial risk management framework and to make recommendations to Council. The Council is responsible for review of the risk management framework for strategic, commercial, operational and compliance risks.

FINANCIAL REPORTING

AIMS' financial statements are prepared in accordance with:

- ◆ Finance Minister's Orders for the reporting period ended 30 June 2009; and
- ◆ Australian Accounting Standards and Accounting Interpretations issued by the Australian Accounting Board that apply for the reporting period.

The financial statements are accompanied by a Management Representation letter to the Australian National Audit Office, signed by the Chairman of Council, Chief Executive Officer and Chief Finance Officer, declaring that the statements present a true and fair view of the financial position, the operating results and the cash flows of the Institute for the year ended 30 June 2009.

INDEPENDENT PROFESSIONAL ADVICE

The 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 - DISCLOSURE OF INTEREST

Section 27F – 27K of the CAC Act provides for the disclosure of material personal interests in a matter that is being considered by the Council and prohibits participation, deliberation and decision making by any member on such matters, unless so resolved by the Council or entitled by the Minister. Details of such disclosure are recorded in the minutes of the meeting. All of these requirements are currently being met.

INTERNAL AUDIT

The Audit Committee approves the annual internal audit plan and receives regular reports on progress against the plan. The internal audit function is performed by Moore Stephens Queensland. The Internal Auditor is responsible for providing an independent risk review function in accordance with the annual plan.

EXTERNAL AUDIT

Under the CAC Act, the Commonwealth Auditor-General, through the Australian National Audit Office (ANAO), is the external auditor for AIMS.

The Audit Committee reviews the ANAO audit plan and reports and meets with ANAO representatives prior to recommending to the Council that the annual financial statements be accepted and the Statement by Council be signed.

INDEMNITIES AND INSURANCE PREMIUMS FOR OFFICERS

During the reporting period there were no liabilities to any current or former officers. 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, as required under the CAC Act.

STAFF CONSULTATION

Staff consultation and communication took place via a range of mediums such as all-staff meetings, emails and the Institute's internal newsletter *Scoop*. The Joint Consultative Committee met five times in 2008–2009. This committee provides a forum for discussion and consultation between management and staff representatives.

CONSULTANCY ADVICE

The Institute sought independent advice from one consulting firm during the 2008-2009 period as a continuation of the advice sought in the previous financial year.

EEO AND WORKPLACE DIVERSITY

The Institute is aware of diversity issues. AIMS' Diversity Policy acknowledges differences and adapts work practices to create an inclusive work environment in which diverse skills, perspectives and cultural backgrounds are valued.

SUB CONTRACTORS

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 \$50,000. 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.



AIMS' Darwin base on the campus of the Arafura Timor Research Facility.
Image: Steve Clarke.

PUBLIC ACCOUNTABILITY



On board RV Solander.

MINISTERIAL DIRECTIONS AND APPROVALS

On 4 August 2008, the Minister for Innovation, Industry, Science and Research directed AIMS' Council, under Section 10 of the *Australian Institute of Marine Science Act 1972*, to implement and comply with a new Australian Government Employment Bargaining Framework and Supporting Guidance. Employment bargaining at the Institute complies with the requirements of the framework.

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. The external review process of AIMS' research quality and impact was continued during the year and is reported earlier in the Report of Operations (External Assessment and Review, page 141).

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 CAC Act. The investments were deposited with three banks in accordance with AIMS' policy on investments.

OCCUPATIONAL HEALTH AND SAFETY

The Institute endeavours to undertake marine research and related activities in a safe and responsible manner for staff and visitors. The Institute holds that "safe science is good science" and that all injuries are preventable. All risks and hazards should be identified and assessed in line with the complexities of the research work, activities and supporting functions required. AIMS has fostered a "stop work" and "speak up" culture where all personnel are encouraged and empowered to delay or stop work where effective risk management controls are not in place.

During 2008–2009, the OHS culture and function within the Institute were strengthened in many ways including:

1. Consultative implementation of the AIMS Health & Safety Management Arrangement (HSMA).
2. Appointment of a Health & Safety Representative in AIMS WA.
3. Appointment of two Field Operations Coordinators providing Health & Safety leadership associated with the Scott Reef offshore operations.
4. Appointment of a second Health and Safety Adviser.
5. Appointment of an AIMS Emergency Warden.
6. Implementation of the Scott Reef Research Project and continuous improvement of the AIMS HSE Management Systems.
7. Provision of the following training:-
 - i. Comcare OHS Training for Supervisors and Managers
 - ii. Health & Safety Representatives' Training
 - iii. Fire Warden Training
 - iv. First Aid and Advanced Resuscitation Training
 - v. Rescue Diver Training
 - vi. ADAS Commercial Diving Accreditation (Part 1, 2 & 3)
 - vii. Driver Safety Training
8. Ongoing review of HSE policies and procedures.
9. Workplace harassment officers and health & safety representatives designated to assist staff and the Institute in promoting and maintaining a safe and healthy workplace.
10. Ongoing confidential Employee Assistance Counselling Program.

INCIDENTS & HAZARD REPORTING

AIMS has encouraged the reporting of hazards and incidents (including potential incidents) and during 2008–2009 a total of 40 incidents were reported (the majority of which did not involve injuries). Appropriate corrective actions were implemented, demonstrating AIMS' commitment to identifying and reporting hazards, implementing control measures and continuous improvement.

During the reporting period there were no incidents that required notification to Comcare under the requirements of Section 68 of the Occupational Health and Safety Act 1991 in relation to serious personal injuries or dangerous occurrences and no workers' compensation claims under the Comcare workers' compensation scheme.

RADIATION SAFETY

The Institute continues to hold a Source Licence from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). The provision of this Source Licence is subject to conditions including regular quarterly reporting, maintenance of a source inventory and compliance with relevant Regulations, Codes and Standards. Radiation safety procedures at AIMS have undergone a review process during 2008-09 (extending into 09/10) in conjunction with ARPANSA to enhance the safety of radiation facilities and work procedures at all AIMS locations.

GENE TECHNOLOGY

No new proposals required assessment by the Institute's Biosafety Committee in 2008-09. Except for one Notifiable Low Risk Dealing (NLRD), all on-going projects using genetically-modified microorganisms are "exempt," as defined by the Office of the Gene Technology Regulator.

ENVIRONMENT

Environmental considerations are a key element of the Institute's decision-making processes in relation to both scientific activities and site development. The Institute has in place a comprehensive Environmental Management Plan (EMP) for the Townsville site (AIMS rents premises at its other laboratories). The effectiveness of the associated Environment Management System is regularly reviewed. The Environment Committee, made up of both research and support staff, oversees the implementation of the EMP.

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

ENERGY USAGE

In 2008 AIMS commenced a three-year program called green@aims to evaluate our energy use and implement ways to monitor, control and reduce. The program is the first step towards AIMS' headquarters in Townsville operating on a carbon neutral basis. Energy usage reduction initiatives during the year focused on improvements to buildings that were underlined in the 2008 energy audit. Actions that have since started include the upgrading of air conditioning controls to reduce running times and reducing lighting costs by replacing fluorescent tubes and dichroic lamps with LED lamps.

Continuing a rolling program that began in 1990, a level 3 Energy Audit (under A/NZS 3598:2000) as well as a Carbon Account Audit was completed in late 2008. This revealed that AIMS produced a total of 9,386 tonnes of CO₂, and maintained its energy usage at 47 terajoules. These results show that AIMS' energy reduction measures are offsetting increases due to organisational growth. The focus for 2009 and beyond will be to reduce CO₂ production, with several major projects planned, including the installation of a high efficiency off-peak chiller system and installation of high efficiency motors on heating, ventilation, air conditioning and seawater systems.

RECYCLING

AIMS aligns itself with the Australian Packaging Covenant Action Plan of 2007 and reported on waste statistics this year. This evaluation highlighted improvement areas for AIMS' waste and recycling systems relating to paper, cardboard, batteries, printer cartridges, lubricants and metals. The Institute's headquarters recycles 100 per cent of treated sewage.

WATER USAGE

An on-site wastewater recycling facility allows all sewage generated at the Townsville headquarters to be treated and reused through the lawn and garden watering systems. Wastewater and rainwater storage capacity was extended in 2008 to further reduce our town water usage. Water-wise initiatives have been adopted throughout the site as a result of an on-going initiative started in 2002.

EEO AND WORKPLACE DIVERSITY

The Institute values the contribution that all staff and visitors make in bringing ideas, skills, competencies and values from both within and outside Australia. Workplace diversity is about acknowledging these differences and adapting work practices to create an inclusive environment where the range of diverse skills, perspectives and backgrounds are recognised, appreciated, supported and valued. AIMS recognises that understanding the individual

differences in the people who work with the Institute enhances the quality and outcomes of the Institute's work.

In terms of EEO:

- ◆ Employment policies and practices are regularly reviewed and steps taken to implement ongoing instruction for user groups;
- ◆ All recruitment advertisements placed in the print media and on the Institute's website promote the fact that the Institute is an equal opportunity employer;
- ◆ AIMS' public access facilities such as Conference Rooms, Theatre, Library, Canteen and Display areas support equity of access and provide for amenities for people with disabilities;
- ◆ Construction of new facilities such as the Centre for Marine Microbiology and Genetics Research support equity of access;
- ◆ Public Tours to the Institute cater for those with a disability and a wheelchair is available if required;
- ◆ The Institute has mechanisms in place to handle complaints and grievances (formal and informal) to address issues and concerns raised by staff and visitors.

The Institute's EEO focus is on ensuring that all people have equal access to facilities and resources. These include workforce issues such as employment and job promotion opportunities, as well as equity of access to training and development activities, the taking of leave and freedom from any form of discrimination.

HARASSMENT

Management, staff and visitors at AIMS share the responsibility of providing and working in an environment free of harassment. In accord with the AIMS' Code of Conduct, staff are required to treat others with courtesy, respect, dignity, fairness and equity and have concern for their rights, freedoms and individual needs. A high standard of behaviour is expected and AIMS has in place a set of principles outlining the way staff are expected to behave towards others.

Workplace Harassment Contact Officers throughout the Institute are available to discuss, in confidence, matters of concern regarding harassment and associated issues raised by a staff member.

In 2008-2009 the Institute had one formal reported case of harassment.

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 vacancy advertisements placed in the print media and on the AIMS web site clearly state that the Institute is an equal opportunity employer.

AIMS' physical resources continue to be upgraded to meet access needs for people with disabilities, which includes provision for the disabled in building modifications and in the construction of new facilities such as the new Centre for Marine Microbiology and Genetics Research. A wheelchair is available for use by disabled visitors to AIMS headquarters in Townsville.

ETHICAL CONDUCT

The Institute has a Code of Conduct to which the Council, management, staff, and medium to long term visitors 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, staff and visitors 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.

EMPLOYEE ASSISTANCE PROGRAM

The OSA Group is contracted by the Institute to provide an independent Employee Assistance Program (EAP). Approximately 3.75 per cent of staff accessed the counselling service during the reporting period, a slight increase on the previous year (3.57 per cent). A further dissection of usage reveals that seven staff and two family members accessed the service. Longer term visitors to the Institute, particularly if they are from interstate or overseas, are able to access this service at no cost, should they need any assistance.

FREEDOM OF INFORMATION

No requests were received in 2008–2009 under the provisions of the *Freedom of Information Act 1982* (FOI Act). The statement required under Section 8 of the FOI Act, setting out documents available for inspection, is at Appendix 7.

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.

General enquiries concerning access to documents, or other matters relating to FOI, should be directed to:

Senior Commercial Lawyer
Australian Institute of Marine Science
PMB No 3, Townsville Mail Centre MC Qld 4810
Telephone: (07) 4753 4146
Facsimile: (07) 4772 5852

CUSTOMER SERVICE CHARTER

The AIMS Service Charter for dealing with clients is posted on our website. The Institute welcomes feedback on how well it is delivering services against the standards set in this charter, and has included a feedback form on the website. Both the charter and the feedback form may be found at <http://www.aims.gov.au/docs/about/corporate/service-charter.html>



AUDITOR-GENERAL'S REPORT

- ◆ Independent Auditor's Report



INDEPENDENT AUDITOR'S REPORT

To the Minister for Innovation, Industry, Science and Research

Scope

I have audited the accompanying financial statements of Australian Institute of Marine Science for the year ended 30 June 2009, which comprise: a Statement by the Directors and Chief Executive Officer; Income Statement; Balance Sheet; Statement of Changes in Equity; Cash Flow Statement; Schedule of Commitments; Schedule of Contingencies; and Notes to and forming part of the Financial Statements, including a Summary of Significant Accounting Policies.

The Directors' Responsibility for the Financial Statements

The directors are responsible for the preparation and fair presentation of the financial statements in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*, including the Australian Accounting Standards (which include the Australian Accounting Interpretations). This responsibility includes establishing and maintaining internal controls relevant to the preparation and fair presentation of the financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditor's Responsibility

My responsibility is to express an opinion on the financial statements based on my audit. I conducted my audit in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. These auditing standards require that I comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error.

GPO Box 757 CANBERRA ACT 2601
19 National Circuit BARTON ACT
Phone (02) 6203 7300 Fax (02) 6203 7777

In making those risk assessments, the auditor considers internal control relevant to the Australian Institute of Marine Science's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Australian Institute of Marine Science's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the directors, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Independence

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

Auditor's 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*, including the Australian Accounting Standards; and
- (b) give a true and fair view of the matters required by the Finance Minister's Orders including the Australian Institute of Marine Science's financial position as at 30 June 2009 and its financial performance and cash flows for the year then ended.

Australian National Audit Office



Mark A Moloney
Senior Director
Delegate of the Auditor-General
Canberra
28 August 2009



FINANCIAL STATEMENTS

- ◆ Statement by Directors and Chief Executive Officer
- ◆ Income Statement for the year ended 30 June 2009
- ◆ Balance Sheet as at 30 June 2009
- ◆ Statement of Changes in Equity as at 30 June 2009
- ◆ Statement of Cash Flows for the year ended 30 June 2009
- ◆ Schedule of Commitments as at 30 June 2009
- ◆ Schedule of Contingencies as at 30 June 2009
- ◆ Notes to and forming part of the Financial Statements
- ◆ Supplementary Financial Information (unaudited) for the year ended 30 June 2009

STATEMENT BY THE DIRECTORS AND CHIEF EXECUTIVE OFFICER

In our opinion, the attached Financial Statements for the year ended, 30 June 2009 are based on properly maintained financial records and 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 Australian Institute of Marine Science will be able to pay its debts as and when they become due and payable.

This statement is made in accordance with the resolution of the Directors.

Signed 

Dr Ian Gould
Chairman of Council
24 August 2009

Signed 

Dr Ian Poiner
Chief Executive Officer
24 August 2009

Signed 

Mr. Victor Bayer
Chief Finance Officer
24 August 2009

INCOME STATEMENT

for the period ended 30 June 2009

| | | 2009 \$'000 | 2008 \$'000 |
|--|----|----------------|----------------|
| INCOME | | | |
| Revenue | | | |
| Revenue from Government | 3A | 27,626 | 26,630 |
| Sale of goods and rendering of services | 3B | 18,324 | 13,258 |
| Interest | 3C | 1,469 | 1,259 |
| Revenue from joint ventures | 3D | 148 | 121 |
| Other revenue | 3E | 2,106 | 4,316 |
| Total revenue | | 49,673 | 45,584 |
| Gains | | | |
| Sale of assets | 3F | 21 | 481 |
| Total gains | | 21 | 481 |
| Total Income | | 49,694 | 46,065 |
| EXPENSES | | | |
| Employee benefits | 4A | 18,966 | 15,151 |
| Suppliers | 4B | 18,379 | 14,877 |
| Depreciation and amortisation | 4C | 5,992 | 5,698 |
| Write-down and impairment of assets | | 2,593 | - |
| Expenditure on joint ventures | 4D | 160 | 378 |
| Interest | | 37 | 79 |
| Foreign exchange losses | | - | 16 |
| Losses from asset sales | 4E | 660 | 100 |
| Write-down and impairment of investments | | 258 | - |
| Total Expenses | | 47,045 | 36,299 |
| Surplus | | 2,649 | 9,766 |
| Surplus (attributable to the Australian Government) | | 2,649 | 9,766 |

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

BALANCE SHEET*as at 30 June 2009*

| | | 2009 | 2008 |
|--|------|----------------|---------------|
| | | \$'000 | \$'000 |
| ASSETS | | | |
| Financial Assets | | | |
| Cash and cash equivalents | 5A | 144 | 474 |
| Trade and other receivables | 5B | 9,485 | 7,225 |
| Investments | 5C | 16,607 | 12,349 |
| Total financial assets | | 26,236 | 20,048 |
| Non-Financial Assets | | | |
| Land and buildings | 6A | 51,824 | 48,109 |
| Infrastructure, plant and equipment | 6B,F | 37,740 | 27,818 |
| Intangibles | 6C,G | 206 | 176 |
| Inventories | 6D | 251 | 219 |
| Other non-financial assets | 6E | 489 | 424 |
| Total non-financial assets | | 90,510 | 76,746 |
| Total Assets | | 116,746 | 96,793 |
| LIABILITIES | | | |
| Payables | | | |
| Suppliers | 7A | 1,441 | 1,969 |
| Other payables | 7B | 2,066 | 2,439 |
| Total payables | | 3,507 | 4,408 |
| Non-Interest Bearing Liabilities | | | |
| Loans | 8A | 1,500 | 540 |
| Total non- interest bearing liabilities | | 1,500 | 540 |
| Provisions | | | |
| Employee provisions | 9A | 5,727 | 5,486 |
| Total provisions | | 5,727 | 5,486 |
| Total Liabilities | | 10,734 | 10,434 |
| Net Assets | | 106,012 | 86,360 |
| EQUITY | | | |
| Contributed equity | | 31,607 | 31,607 |
| Reserves | | 51,378 | 34,375 |
| Retained surplus | | 23,026 | 20,378 |
| Total Equity | | 106,011 | 86,360 |
| Current Assets | | 26,954 | 20,679 |
| Non-Current Assets | | 89,792 | 76,114 |
| Current Liabilities | | 8,809 | 8,938 |
| Non-Current Liabilities | | 1,925 | 1,545 |

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

as at 30 June 2009

Opening balance

Balance carried forward from previous period

Income and expenses

Surplus for the period

Total income and expenses

Closing balance as at 30 June

Closing balance attributable to the Australian Government

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

CASH FLOW STATEMENT

for the period ended 30 June 2009

| | Notes | 2009 \$'000 | 2008 \$'000 |
|---|-------|----------------|-----------------|
| OPERATING ACTIVITIES | | | |
| Cash received | | | |
| Goods and services | | 15,517 | 12,203 |
| Receipts from Government | | 27,626 | 26,630 |
| Interest | | 1,508 | 1,260 |
| Net GST received | | 328 | 1,072 |
| Other cash received | | 2,252 | 234 |
| Total cash received | | 47,231 | 41,399 |
| Cash used | | | |
| Employees | | 18,461 | 15,921 |
| Suppliers | | 19,754 | 17,086 |
| Payment to Joint Ventures | | 107 | 172 |
| Total cash used | | 38,322 | 33,179 |
| Net cash from (used by) operating activities | 10 | 8,909 | 8,220 |
| INVESTING ACTIVITIES | | | |
| Cash received | | | |
| Proceeds from sales of property, plant and equipment | | 348 | 1,025 |
| Total cash received | | 348 | 1,025 |
| Cash used | | | |
| Purchase of property, plant and equipment | | 6,289 | 11,782 |
| Total cash used | | 6,289 | 11,782 |
| Net cash from (used by) investing activities | | (5,941) | (10,757) |
| FINANCING ACTIVITIES | | | |
| Cash received | | | |
| Loan Proceeds | | 960 | 540 |
| Total cash received | | 960 | 540 |
| Net cash from (used by) financing activities | | 960 | 540 |
| Net increase (decrease) in cash held | | 3,928 | (1,997) |
| Cash and cash equivalents at the beginning of the reporting period | | 12,823 | 14,820 |
| Cash and cash equivalents at the end of the reporting period | 5A,C | 16,751 | 12,823 |

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

SCHEDULE OF COMMITMENTS

as at 30 June 2009

| | 2009 \$'000 | 2008 \$'000 |
|--|----------------|----------------|
| BY TYPE | | |
| Commitments receivable | | |
| CMMG facility funding | - | 960 |
| Total commitments receivable | - | 960 |
| Capital commitments payable | | |
| Land and buildings | 14 | 201 |
| Infrastructure, plant and equipment ¹ | 897 | 1,558 |
| Total capital commitments payable | 911 | 1,759 |
| Other commitments payable | | |
| Operating leases | 14 | 3 |
| Other commitments ² | 23,532 | 25,067 |
| Total other commitments | 23,546 | 25,070 |
| Net commitments by type | 24,457 | 25,869 |
| BY MATURITY | | |
| Commitments receivable | | |
| Operating lease income | | |
| One year or less | - | 960 |
| Total operating lease income | - | 960 |
| Commitments payable | | |
| Capital commitments | | |
| One year or less | 911 | 1,759 |
| Total capital commitments | 911 | 1,759 |
| Operating lease commitments payable | | |
| One year or less | 14 | 3 |
| From one to five years | - | - |
| Total operating lease commitments | 14 | 3 |
| Other commitments | | |
| One year or less | 9,433 | 11,969 |
| From one to five years | 14,099 | 13,098 |
| From one to five years | - | - |
| Total other Commitments | 23,532 | 25,067 |
| Net Commitments by maturity | 24,457 | 25,869 |

NB: Commitments are GST inclusive where relevant.

1. Purchase orders for the construction of the Great Barrier Reef Ocean Observing System, scientific equipment and vehicles

2. Purchase orders for scientific research, contractual obligations for support services and externally funded research

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

SCHEDULE OF CONTINGENCIES

as at 30 June 2009

| Contingent Assets | Guarantees | | Indemnities | | Claims for damages or costs | | TOTAL | |
|--------------------------------|------------|------------|-------------|----------|-----------------------------|----------|------------|------------|
| | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 |
| | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 |
| Balance from previous period | 306 | 6,135 | - | - | - | - | 306 | 6,135 |
| New | - | 306 | - | - | - | - | - | 306 |
| Expired | - | (6,135) | - | - | - | - | - | (6,135) |
| Total Contingent Assets | 306 | 306 | - | - | - | - | 306 | 306 |

Details of each class of contingent assets, including those not included above because they cannot be quantified, are disclosed in Note 11: Contingent Liabilities and Assets. There are no known contingent liabilities.

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

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Note 1: Summary of Significant Accounting Policies

1.1 Objectives of Australian Institute of Marine Science

The objective of the Australian Institute of Marine Science (AIMS) is the protection and sustainable development of Australia's marine resources.

AIMS is structured to meet one outcome:

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

The Financial Statements and notes are required by clause 1(b) of Schedule 1 to the *Commonwealth Authorities and Companies Act 1997* and are General Purpose Financial Statements.

The continued existence of AIMS in its present form and with its present programs is dependent on Government policy and on continuing appropriations by Parliament for AIMS administration and programs.

The Financial Statements and notes have been prepared in accordance with:

- Finance Minister's Orders (FMO) for reporting periods ending on or after 1 July 2008; and
- Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The Financial Statements have been prepared on an accrual basis and are in accordance with historical cost convention, except for certain assets at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

The Financial Statements are presented in Australian dollars and values are rounded to the nearest thousand dollars unless otherwise specified.

Unless an alternative treatment is specifically required by an accounting standard or the FMO, assets and liabilities are recognised in the Balance Sheet when and only when it is probable that future economic benefits will flow to the entity and the amounts of the assets or liabilities can be reliably measured. However, assets and liabilities arising under agreements equally proportionately unperformed are not recognised unless required by an accounting standard.

Unless alternative treatment is specifically required by an accounting standard, income and expenses are recognised in the Income Statement when, and only when, the flow, consumption or loss of economic benefits has occurred and can be reliably measured.

1.2 Significant Accounting Judgements and Estimates

In the process of applying the accounting policies listed in this note, AIMS has made the following judgements that have the most significant impact on the amounts recorded in the financial statements:

- The buildings, plant and equipment have been valued at depreciated replacement cost determined by an independent valuer. The independent valuer deemed that the assets would seldom trade on the open market due to their specialised nature and have therefore adopted this approach to valuation.

No accounting assumptions or estimates have been identified that have a significant risk of causing a material adjustment to carrying amounts of assets and liabilities within the next accounting period.

1.3 New Accounting Standards

Adoption of New Australian Accounting Standard Requirements

No accounting standard has been adopted earlier than the application date as stated in the standard. The following new standards and amendments to standards are applicable to the current reporting period:

AASB 2007-9 Amendments to Australian Accounting Standards arising from the Review of

AASs 27, 29 and 31 relocated a number of paragraphs from AASs 27, 29 and 31 substantively unamended into the following existing standards AASB 3, 5, 8, 101, 114, 116, 127 and 137.

AASB 1004 *Contributions* also received a number of substantively unamended paragraphs from AASs 27, 29 and 31 following their withdrawal.

AASB 1050 *Administered items* and AASB 1052 *Disaggregated Disclosures* were created and received a number of substantively unamended paragraphs from AASs 27 and 29.

It is not expected that the relocation of AASs 27, 29 and 31 will have a material financial impact but may affect the disclosure presented in future financial reports.

AASB 1051 *Land Under Roads* was created and takes over from AASs 27, 29 and 31 in respect of land under roads. The new standard allows entities to recognise or not to recognise as an asset, land under roads acquired before the end of the first reporting period ending on or after 31 December 2007. AIMS elects not to recognise. The standard also clarifies that the principles in other Standards (including AASB 116 Property, Plant and Equipment) apply to land under roads, except to the extent that AASB 1051 requires or permits otherwise, including the requirement that land under roads acquired after the end of the first reporting period ending on or after 31 December 2007 is accounted for in accordance with AASB 116. It is not practicable to determine the financial impact this will have.

AASB 123: *Borrowing Costs* and AASB 2007-6: *Amendments to Australian Accounting Standards arising from AASB 123 (AASB 1, AASB 101, AASB 107, AASB 111, AASB 116 and AASB 138 and Interpretations 1 and 12)* (applicable for annual reporting periods commencing from 1 January 2009). The revised AASB 123 has removed the option to expense all borrowing costs and will therefore require the capitalisation of all borrowing costs directly attributable to the acquisition, construction or production of a qualifying asset. It is not expected that any changes will have a material effect on future financial statements.

AASB 2008-5: *Amendments to Australian Accounting Standards arising from the Annual Improvements Project (July 2008)* and AASB 2008-6: *Further Amendments to Australian Accounting Standards arising from the Annual Improvements Project (July 2008)* detail numerous non-urgent but necessary changes to accounting standards arising from the IASB's annual improvement project. No changes are expected to materially affect the Institute.

Future Australian Accounting Standard Requirements

AASB 3: *Business Combinations*, AASB 127: *Consolidated and Separate Financial Statements*, AASB 2008-3: *Amendments to Australian Accounting Standards arising from AASB 3 and AASB 127 (AASB Standards, 1, 2, 4, 5, 7, 101, 107, 112, 114, 116, 121, 128, 131, 132, 133, 134, 136, 137, 138 and 139 and Interpretations 9 and 107)* (applicable for annual reporting periods commencing from 1 July 2009) and AASB 2008-7: *Amendments to Australian Accounting Standards - Cost of an Investment in a Subsidiary, Jointly Controlled Entity or Associate (AASB 1, AASB 118, AASB 121, AASB 127 and AASB 136)* (applicable for annual reporting periods commencing from 1 January 2009). These Standards are applicable prospectively and so will only affect relevant transactions and consolidations occurring from the date of application. Neither of these Standards are currently applicable to AIMS.

AASB 101: *Presentation of Financial Statements*, AASB 2007-8: *Amendments to Australian Accounting Standards arising from AASB 101*, and AASB 2007-10: *Further Amendments to Australian Accounting Standards arising from AASB 101* (all applicable to annual reporting periods commencing from 1 January 2009). The revised AASB 101 and amendments supersede the previous AASB 101 and redefine the composition of financial statements including the inclusion of a statement of comprehensive income. There will be no measurement or recognition impact on AIMS.

1.4 Revenue

Revenue from the sale of goods is recognised when:

- the risks and rewards of ownership have been transferred to the buyer;
- the seller retains no managerial involvement nor effective control over the goods;
- the revenue and transaction costs incurred can be reliably measured; and
- it is probable that the economic benefits associated with the transaction will flow to the entity.

Revenue from rendering of services is recognised by reference to the stage of completion of contracts at the reporting date. The revenue is recognised when:

- the amount of revenue, stage of completion and transaction costs incurred can be reliably measured; and
- the probable economic benefits associated with the transaction will flow to AIMS.

The stage of completion of contracts at the reporting date is determined by reference to the proportion that costs incurred to date bear to the estimated total costs of the transaction.

Receivables for goods and services, which have 30 day terms, are recognised at the nominal amounts due less any impairment allowance account. Collectability of debts is reviewed at balance date. Allowances are made when collectability of the debt is no longer probable.

Interest revenue is recognised using the effective interest method as set out in AASB 139 *Financial Instruments: Recognition and Measurement*.

Revenue from Government

Funding received or receivable from the Department of Innovation, Industry, Science and Research (appropriated to the department as a CAC Act body payment item for payment to AIMS) is recognised as Revenue from Government unless they are in the nature of an equity injection.

1.5 Gains

Sale of Assets

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

1.6 Transactions with the Government as Owner

Equity Injections

Amounts that are designated as equity injections for a year are recognised directly in contributed equity in that year. AIMS had no such injections during the year.

Restructuring of Administrative Arrangements

Net assets received from or relinquished to another Australian Government agency or authority under a restructuring of administrative arrangements are adjusted at their book value directly against contributed equity. AIMS was not involved in a restructuring of administrative arrangement during the year.

Other Distributions to Owners

The FMO require that distributions to owners be debited to contributed equity unless in the nature of a dividend. In 2008-09, by agreement with the Department of Finance and Deregulation, AIMS did not relinquish control of any surplus output appropriation funding.

1.7 Employee Benefits

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

Liabilities for short-term employee benefits (as defined in AASB 119) and termination benefits due within twelve months of balance date are 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 at 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 Authority is estimated to be less than the annual entitlement for sick leave.

The leave liabilities are calculated on the basis of employees' remuneration at the estimated salary rates that applied at the time the leave is taken, including the Authority'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 liability for long service leave is recognised and measured at the present value of the estimated cash flows to be made in respect of all employees at 30 June 2009. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Separation and Redundancy

Provision is made for separation and redundancy benefit payments. AIMS recognises a provision for termination when it has developed a detailed formal plan for the terminations and has informed those employees affected that it will carry out the terminations.

Superannuation

Staff of AIMS are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or the PSS accumulation plan (PSSap).

The CSS and PSS are defined benefit schemes for the Australian Government. The PSSap is a defined contribution scheme.

The liability for defined benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course. This liability is reported by the Department of Finance and Deregulation as an administered item.

AIMS makes employer contributions to the employee superannuation schemes at rates determined by an actuary to be sufficient to meet the current cost to the Government of the superannuation entitlements of AIMS employees. AIMS accounts for the contributions as if they were contributions to defined contribution plans.

The liability for superannuation recognised as at 30 June represents outstanding contributions for the final fortnight of the year.

1.8 Leases

A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risks and rewards incidental to ownership of leased non-current assets. An operating lease is a lease that is not a finance lease. In operating leases, the lessor effectively retains substantially all such risks and benefits.

Where a non-current asset is acquired by means of a finance lease, the asset is capitalised at either the fair value of the lease property or, if lower, the present value of minimum lease payments at the inception of the contract and a liability is recognised at the same time and for the same amount.

The discount rate used is the interest rate implicit in the lease. Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

Operating lease payments are expensed on a straight-line basis which is representative of the pattern of benefits derived from the leased assets.

1.9 Interest

Interest is expensed as incurred.

1.10 Cash

Cash and cash equivalents includes notes and coins held and any deposits in bank accounts with an original maturity of 3 months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value. Cash is recognised at its nominal amount.

1.11 Financial Assets

AIMS classifies its financial assets in the following categories:

- held-to-maturity investments;
- loans and receivables.

The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

Financial assets are recognised and derecognised upon trade date.

Effective Interest Method

The effective interest method is a method of calculating the amortised cost of a financial asset and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset, or, where appropriate, a shorter period.

Income is recognised on an effective interest rate basis except for financial assets at fair value through profit or loss.

Held-to-Maturity Investments

Non-derivative financial assets with fixed or determinable payments and fixed maturity dates that the group has the positive intent and ability to hold to maturity are classified as held-to-maturity investments. Held-to-maturity investments are recorded at amortised cost using the effective interest method less impairment, with revenue recognised on an effective yield basis.

Loans and Receivables

Trade receivables, loans and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as loans and receivables. They are included in current assets, except for maturities greater than 12 months after the balance sheet date. These are classified as non current assets. Loans and receivables are measured at amortised cost using the effective interest method less impairment. Interest is recognised by applying the effective interest rate.

Impairment of Financial Assets

Financial assets are assessed for impairment at each balance date.

Financial assets held at amortised cost - if there is objective evidence that an impairment loss has been incurred for loans and receivables or held to maturity investments held at amortised cost, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the asset's original effective interest rate. The carrying amount is reduced by way of an allowance account. The loss is recognised in the income statement.

1.12 Financial Liabilities

Financial liabilities are classified as either financial liabilities at fair value through profit or loss or other financial liabilities.

Financial liabilities are recognised and derecognised upon trade date.

Financial Liabilities at Fair Value Through Profit or Loss

Financial liabilities at fair value through profit or loss are initially measured at fair value. Subsequent fair value adjustments are recognised in profit or loss. The net gain or loss recognised in profit or loss incorporates any interest paid on the financial liability.

Other Financial Liabilities

Other financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs.

Other financial liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective yield basis.

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period.

1.13 Contingent Liabilities and Contingent Assets

Contingent liabilities and contingent assets are not recognised in the balance sheet but are reported in the relevant schedules and notes. They may arise from uncertainty as to the existence of a liability or asset or represent an asset or liability in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain and contingent liabilities are disclosed when settlement is greater than remote.

1.14 Acquisition of Assets

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and income at their fair value at the date of acquisition, unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor Authority's accounts immediately prior to the restructuring.

1.15 Property, Plant and Equipment

Asset Recognition Threshold

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

The initial cost of an asset includes an estimate of the cost of dismantling and removing the item and restoring the site on which it is located. This is particularly relevant to make good provisions in property leases taken up by AIMS where there exists an obligation to original condition. These costs are included in the value of AIMS' s leasehold improvements with a corresponding provision for make good recognised.

Revaluations

Fair values for each class of asset are determined as shown below:

| Asset Class | Fair Value Measured At: |
|------------------------|--|
| Buildings | Depreciated Replacement Cost |
| Leasehold Improvements | Open Market Value where such a market exists else Depreciated Replacement Cost |
| Plant and Equipment | Open Market Value where such a market exists else Depreciated Replacement Cost |

Following initial recognition at cost, property plant and equipment are carried at fair value less subsequent accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the assets' fair values as at the reporting date. The regularity of independent valuations depends upon the volatility of movements in market values for the relevant assets but are carried out at least every three years.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading of asset revaluation reserve except to the extent that it reverses a previous revaluation decrement of the same asset class that was previously recognised through operating result. Revaluation decrements for a class of assets are recognised directly through operating result except to the extent that they reverse a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset and the asset restated to the revalued amount.

Depreciation

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

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

| | <u>2009</u> | <u>2008</u> |
|--------------------------------------|--------------------|-------------|
| Buildings and leasehold improvements | 10-80 years | 10-80 years |
| Plant and equipment | 3-41 years | 3-20 years |

Impairment

All assets were assessed for impairment at 30 June 2009. Where indications of impairment exist, an impairment adjustment is made if the asset's recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its fair value less costs to sell and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if AIMS were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

1.16 Intangibles

AIMS intangibles comprise software. These assets are carried at cost less accumulated amortisation and accumulated impairment losses.

Software is amortised on a straight-line basis over its anticipated useful life. The useful lives of AIMS' software are 2 to 12 years (2007-08: 3 to 12 years).

All software assets were assessed for indications of impairment as at 30 June 2009.

1.17 Inventories

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

Inventories held for distribution are valued at cost, adjusted for any loss of service potential. Inventories acquired at no cost or nominal consideration are initially measured at current replacement cost at the date of acquisition.

1.18 Taxation

AIMS is exempt from all forms of taxation except Fringe Benefits Tax (FBT) 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
- for receivables and payables.

1.19 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 rate current as at balance date. Associated currency gains and losses are not material.

1.20 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.

1.21 Contract research

AIMS 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 AIMS does not attribute any value in the Financial Statements.

1.22 Consultancies and grants

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

1.23 Investments

AIMS has interests in:

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

Cleveland Biosensors Pty Ltd

AIMS retains an investment of 6.7% (2008: 4.4%) in a private company Cleveland Biosensors Pty Ltd (CBPL). As at 30 June 2009 AIMS held Notes with a face value of \$1,134,877 in CBPL. Conditions applying to the Notes are specified in CBPL Deed Poll. This is not a controlling ownership and so does not require consolidation of CBPL in the AIMS' Financial Report.

AIMS @ JCU Joint Venture

AIMS has entered into joint venture operations with James Cook University (JCU) to:-

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

The joint venture operations has 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.

AIMS is responsible for managing the funds on behalf of the joint venture operations. As at 30 June 2009 AIMS held \$526,500 (2008: \$1,189,075) on behalf of the joint venture operations. This is shown as a liability in AIMS' Financial Report. (Refer Note 16D: Financial Liabilities)

The Arafura Timor Research Facility Joint Venture

AIMS has entered into joint venture operations with the Australian National University. AIMS has a 50% share and this is consolidated. 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 and biological sciences with the capability of pursuing world class research and training in that field. The Australian National University is responsible for managing the financial affairs of the joint venture.

Note 2: Events After the Balance Sheet Date

Australia Institute of Marine Science is not aware of any material events that have occurred since balance date.

Note 3: Income

| | 2009 | 2008 |
|----------------|---------------|---------------|
| <i>Revenue</i> | <i>\$'000</i> | <i>\$'000</i> |

Note 3A: Revenue from Government

Appropriations:

| | | |
|--------------------------------------|---------------|---------------|
| Departmental Outputs | 27,626 | 26,630 |
| <i>Total revenue from Government</i> | <u>27,626</u> | <u>26,630</u> |

Note 3B: Sale of Goods and Rendering of Services

| | | |
|--|---------------|---------------|
| Provision of goods - external parties | 17 | 68 |
| Rendering of services - related entities | 3,820 | 3,689 |
| Rendering of services - external parties | 14,487 | 9,501 |
| <i>Total sale of goods and rendering of services</i> | <u>18,324</u> | <u>13,258</u> |

Note 3C: Interest

| | | |
|-----------------------|--------------|--------------|
| Interest | 1,469 | 1,259 |
| <i>Total Interest</i> | <u>1,469</u> | <u>1,259</u> |

Note 3D: Revenue from Joint Ventures

| | | |
|--|------------|------------|
| Joint ventures | 148 | 121 |
| <i>Total revenue from joint ventures</i> | <u>148</u> | <u>121</u> |

Note 3E: Other Revenue

| | | |
|--------------------------------|--------------|--------------|
| Insurance claims | 22 | 18 |
| Revenue from capital equipment | 2,002 | 4,164 |
| Other | 82 | 134 |
| <i>Total Other Revenue</i> | <u>2,106</u> | <u>4,316</u> |

Gains

Note 3F: Sale of Assets

Infrastructure, plant and equipment:

| | | |
|-------------------------------------|-----------|------------|
| Proceeds from sale | 237 | 666 |
| Carrying value of assets sold | (216) | (185) |
| <i>Net gain from sale of assets</i> | <u>21</u> | <u>481</u> |

Note 4: Expenses

2009
\$'000

2008
\$'000

Note 4A: Employee Benefits

| | | |
|--------------------------------|---------------|---------------|
| Wages and salaries | 14,527 | 11,608 |
| Superannuation: | | |
| Defined contribution plans | 2,188 | 1,696 |
| Leave and other entitlements | 2,064 | 1,621 |
| Fringe benefit tax | 187 | 226 |
| Total employee benefits | 18,966 | 15,151 |

Note 4B: Suppliers

| | | |
|--|---------------|---------------|
| Provision of goods – related entities | 6 | 6 |
| Provision of goods – external parties | 3,921 | 3,860 |
| Rendering of services – related entities | 1,089 | 610 |
| Rendering of services – external parties | 13,261 | 10,228 |
| Operating lease rentals | | |
| Minimum lease payments | 7 | 79 |
| Workers compensation premiums | 95 | 94 |
| Total supplier expenses | 18,379 | 14,877 |

Note 4C: Depreciation and amortisation

Depreciation:

| | | |
|-------------------------------------|--------------|--------------|
| Building and leasehold improvements | 1,889 | 1,777 |
| Plant & Equipment | 1,900 | 2,001 |
| Computer Equipment | 596 | 445 |
| Vehicles | 450 | 381 |
| Office Equipment | 41 | 49 |
| Ships, launches and vessels | 958 | 639 |
| Library | 129 | 345 |
| Total depreciation | 5,963 | 5,637 |

Amortisation:

Intangibles:

| | | |
|--|--------------|--------------|
| Computer software | 29 | 61 |
| Total amortisation | 29 | 61 |
| Total depreciation and amortisation | 5,992 | 5,698 |

Note 4D: Expenditure on joint ventures

| | | |
|--|------------|------------|
| Depreciation | 53 | 51 |
| Other expenditure | 107 | 327 |
| Total expenditure on joint ventures | 160 | 378 |

Note 4E: Losses from assets sales

| | | |
|---------------------------------------|------------|------------|
| Buildings and leasehold improvements | | |
| Proceeds from sale | - | - |
| Carrying value of assets sold | 611 | - |
| Infrastructure, plant and equipment | | |
| Proceeds from sale | (110) | (359) |
| Carrying value of assets sold | 159 | 459 |
| Total losses from assets sales | 660 | 100 |

Note 5: Financial Assets

| | 2009 \$'000 | 2008 \$'000 |
|---|----------------|----------------|
| Note 5A: Cash and Cash Equivalents | | |
| Cash on hand or on deposit | 6 | 6 |
| Cash at bank | 138 | 468 |
| Total cash and cash equivalents | 144 | 474 |

Note 5B: Trade and Other Receivables

| | | |
|--|--------------|--------------|
| Goods and services-related entities | 1,201 | 584 |
| Goods and services - external parties | 8,094 | 6,237 |
| Total trade and other receivables | 9,295 | 6,821 |
| GST receivable from the Australian Taxation Office | - | 80 |
| Other: | | |
| Interest | 103 | 401 |
| Other receivables | 87 | 70 |
| Total other receivables | 190 | 471 |
| Total trade and other receivables (gross) | 9,485 | 7,372 |
| Less impairment allowance account: | | |
| Goods and services | - | (147) |
| Total Impairment allowance account | - | (147) |
| Total trade and other receivables (net) | 9,485 | 7,225 |

Receivables are represented by:

| | | |
|--|--------------|--------------|
| Current | 9,485 | 7,225 |
| Non-current | - | - |
| Total trade and other receivables (net) | 9,485 | 7,225 |

Receivables are aged as follows:

| | | |
|----------------------------------|--------------|--------------|
| Not overdue | 5,388 | 5,935 |
| Overdue by: | | |
| 30 to 60 days | 3,314 | 830 |
| 61 to 90 days | 509 | 9 |
| More than 90 days | 274 | 598 |
| Total receivables (gross) | 9,485 | 7,372 |

The impairment allowance account is aged as follows:

| | | |
|---|----------|--------------|
| Overdue by: | | |
| Less than 30 days | - | - |
| 30 to 60 days | - | - |
| 61 to 90 days | - | - |
| More than 90 days | - | (147) |
| Total impairment allowance account | - | (147) |

Note 5: Financial Assets (cont.)

Reconciliation of the impairment allowance account:

Movements in relation to 2009

| | Goods and services 2009 \$'000 | Other receivables 2009 \$'000 | Total 2009 \$'000 |
|---|---|--|-------------------------|
| Opening balance | (147) | - | (147) |
| Amounts written off | | - | - |
| Amounts recovered and reversed | 147 | - | 147 |
| Increase/decrease recognised in net surplus | - | - | - |
| Closing balance | - | - | - |

Movements in relation to 2008

| | Goods and services 2008 \$'000 | Other receivables 2008 \$'000 | Total 2008 \$'000 |
|---|---|--|-------------------------|
| Opening balance | (147) | | (147) |
| Amounts written off | - | - | - |
| Amounts recovered and reversed | - | - | - |
| Increase/decrease recognised in net surplus | - | - | - |
| Closing balance | (147) | - | (147) |

Note 5C: Investments

| | 2009 \$'000 | 2008 \$'000 |
|--------------------------------------|----------------|----------------|
| Deposits | 16,081 | 11,160 |
| Deposits on behalf of joint ventures | 526 | 1,189 |
| Total Investments | 16,607 | 12,349 |

Other financial assets are expected to be recovered in:

| | | |
|--------------------------|---------------|---------------|
| Less than 12 months | 16,607 | 12,349 |
| Total investments | 16,607 | 12,349 |

Note 6: Non-Financial Assets

| | 2009 \$'000 | 2008 \$'000 |
|---|----------------------|----------------------|
| Note 6A: Building and Leasehold Improvements | | |
| Buildings on freehold land: | | |
| fair value | 52,259 | 50,845 |
| work in progress | 231 | 1,261 |
| | <u>52,490</u> | <u>52,106</u> |
| accumulated depreciation | (666) | (3,997) |
| Total buildings and leasehold improvements | <u>51,824</u> | <u>48,109</u> |
| Note 6B: Infrastructure, Plant and Equipment | | |
| Plant and equipment: | | |
| gross carrying value (at fair value) | 13,522 | 12,833 |
| work in progress | 644 | 970 |
| | <u>14,166</u> | <u>13,803</u> |
| accumulated depreciation | (656) | (4,985) |
| Total plant and equipment | <u>13,510</u> | <u>8,818</u> |
| Plant and equipment are subject to revaluation. The carrying amount is included in the valuation figures above. | | |
| Computer equipment | | |
| - fair value | 1,825 | 2,177 |
| work in progress | 102 | - |
| | <u>1,927</u> | <u>2,177</u> |
| - accumulated depreciation | (208) | (848) |
| Total computer equipment | <u>1,719</u> | <u>1,329</u> |
| Vehicles | | |
| - fair value | 1,548 | 1,703 |
| - accumulated depreciation | (105) | (385) |
| Total vehicles | <u>1,443</u> | <u>1,318</u> |
| Office equipment | | |
| - fair value | 207 | 341 |
| - accumulated depreciation | (13) | (125) |
| Total office equipment | <u>194</u> | <u>216</u> |
| Ships, launches and vessels: | | |
| - fair value | 18,241 | 16,206 |
| - work in progress | 255 | 46 |
| | <u>18,496</u> | <u>16,252</u> |
| - accumulated depreciation | (290) | (902) |
| Total ships, launches and vessels | <u>18,206</u> | <u>15,350</u> |
| Library books | | |
| - fair value | 2,706 | 1,611 |
| - accumulated depreciation | (38) | (824) |
| Total library books | <u>2,668</u> | <u>787</u> |
| Total infrastructure, plant and equipment: | | |
| - gross carrying value (at fair value) | 38,049 | 34,871 |
| - work in progress | 1,001 | 1,016 |
| | <u>39,050</u> | <u>35,887</u> |
| - accumulated depreciation | (1,310) | (8,069) |
| Total infrastructure, plant and equipment | <u>37,740</u> | <u>27,818</u> |

Note 6: Non-Financial Assets (cont.)

| | |
|--------|--------|
| 2009 | 2008 |
| \$'000 | \$'000 |

Note 6C: Intangibles

Computer Software at cost:

| | | |
|--|-------------------|-------------------|
| Internally developed - in use | 256 | 559 |
| Work in progress at cost | - | 5 |
| | <u>256</u> | <u>564</u> |
| accumulated amortisation | (50) | (388) |
| Total intangibles (non-current) | <u><u>206</u></u> | <u><u>176</u></u> |

All revaluations were conducted in accordance with the revaluation policy stated at Note 1. On 31 March 2009 independent valuers, Becca Valuations Ltd and Captain B.Copland (Marine Surveyor & Consultant) conducted the revaluations. No indicators of impairment were found for infrastructure, plant and equipment and other non-financial assets.

Revaluation increments were credited to the asset revaluation reserve

| | | |
|------------------|---------------|----------|
| Buildings | 7,815 | - |
| Computers | 412 | - |
| Motor Vehicles | 57 | - |
| Office Furniture | 14 | - |
| Plant & Equip | 3,495 | - |
| Ships & Vessels | 3,126 | - |
| Library | 2,090 | - |
| Software | 65 | - |
| | <u>17,074</u> | <u>-</u> |

Revaluations attributable to relieving of assets were expensed as

| | | |
|------------------|-------------|----------|
| Buildings | 540 | - |
| Computers | (18) | - |
| Motor Vehicles | 6 | - |
| Office Furniture | (6) | - |
| Plant & Equip | (468) | - |
| Library | (80) | - |
| Software | (46) | - |
| Total | <u>(71)</u> | <u>-</u> |

Note 6D: Inventories

| | | |
|--|------------|------------|
| Inventories held for sale - finished goods | 32 | 33 |
| Inventories held for distribution | 219 | 186 |
| Total inventories (current) | <u>251</u> | <u>219</u> |

Note 6E: Other Non-Financial Assets

| | | |
|---|------------|------------|
| Workshop jobs in progress | - | 192 |
| Prepayments | 489 | 232 |
| Total other non-financial assets | <u>489</u> | <u>424</u> |

No indicators of impairment were found for other non-financial assets.

Note 6: Non-Financial Assets (cont.)

Note 6F Analysis of Property, Plant and Equipment

TABLE A – Reconciliation of the opening and closing balances of property, plant and equipment (2008-09)

| | Buildings and Leasehold | Plant and Equipment | Computer Equipment | Vehicles | Office Equipment | Vessels & Launches | Library Books | Total |
|--|-------------------------------|------------------------|-----------------------|--------------|---------------------|-----------------------|------------------|---------------|
| | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 |
| As at 1 July 2008 | | | | | | | | |
| Gross book value | 52,106 | 13,803 | 2,177 | 1,703 | 341 | 16,252 | 1,611 | 87,993 |
| Accumulated depreciation/amortisation and impairment | (3,997) | (4,985) | (848) | (385) | (125) | (902) | (824) | (12,066) |
| Net book value 1 July 2008 | 48,109 | 8,818 | 1,329 | 1,318 | 216 | 15,350 | 787 | 75,927 |
| Additions: | | | | | | | | |
| By purchase | 506 | 3,570 | 601 | 870 | 11 | 689 | | 6,247 |
| Revaluations and impairments through equity | 7,815 | 3,495 | 412 | 57 | 14 | 3,125 | 2,090 | 17,008 |
| Revaluations recognised in the operating result | 540 | (467) | (18) | 6 | (6) | | (80) | (25) |
| Impairments recognised in the operating result | (2,593) | | | | | | | (2,593) |
| Depreciation/amortisation expense | (1,889) | (1,900) | (596) | (450) | (41) | (958) | (129) | (5,963) |
| Other movements- Depreciation on share of ATRF | (53) | | | | | | | (53) |
| Disposals: | | | | | | | | |
| Other disposals | (611) | (6) | (9) | (358) | - | - | - | (984) |
| Net book value 30 June 2009 | 51,824 | 13,511 | 1,719 | 1,443 | 194 | 18,206 | 2,668 | 89,565 |
| Net book value as of 30 June 2009 represented by: | | | | | | | | |
| Gross book value | 52,490 | 14,166 | 1,927 | 1,548 | 207 | 18,496 | 2,706 | 91,539 |
| Accumulated depreciation/amortisation and impairment | (666) | (656) | (208) | (105) | (13) | (290) | (38) | (1,975) |
| | 51,824 | 13,510 | 1,719 | 1,443 | 194 | 18,206 | 2,668 | 89,564 |

Note 6: Non-Financial Assets (cont.)

Note 6F: Analysis of Property, Plant and Equipment

TABLE A – Reconciliation of the opening and closing balances of property, plant and equipment (2007-08)

| | Buildings and Leasehold | | Plant and Equipment | Computer Equipment | Vehicles | Office Equipment | Vessels & Launches | Library Books | Total |
|--|-------------------------|--------------|---------------------|--------------------|--------------|------------------|--------------------|---------------|---------------|
| | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 | \$'000 |
| As at 1 July 2007 | | | | | | | | | |
| Gross book value | 50,707 | 11,243 | 1,714 | | 1,718 | 340 | 9,892 | 1,611 | 77,225 |
| Accumulated depreciation/amortisation and impairment | (2,094) | (3,012) | (430) | | (284) | (76) | (362) | (479) | (6,737) |
| Net book value 1 July 2007 | 48,613 | 8,231 | 1,284 | | 1,434 | 264 | 9,530 | 1,132 | 70,488 |
| Additions: | | | | | | | | | |
| By purchase | 1,336 | 2,596 | 517 | | 737 | 1 | 6,583 | - | 11,770 |
| Depreciation/amortisation expense | (1,777) | (2,001) | (445) | | (381) | (49) | (639) | (345) | (5,637) |
| Other movements - Depreciation on Share of ATRF | (51) | - | - | | - | - | - | - | (51) |
| Disposals: | | | | | | | | | |
| Other disposals | (12) | (8) | (27) | | (472) | - | (124) | - | (643) |
| Net book value 30 June 2008 | 48,109 | 8,818 | 1,329 | | 1,318 | 216 | 15,350 | 787 | 75,927 |
| Net book value as of 30 June 2008 represented by: | | | | | | | | | |
| Gross book value | 52,106 | 13,803 | 2,177 | | 1,703 | 341 | 16,252 | 1,611 | 87,993 |
| Accumulated depreciation/amortisation and impairment | (3,997) | (4,985) | (848) | | (385) | (125) | (902) | (824) | (12,066) |
| | 48,109 | 8,818 | 1,329 | | 1,318 | 216 | 15,350 | 787 | 75,927 |

Note 6: Non-Financial Assets (cont.)

Note 6G: Intangibles

Table C: Reconciliation of the opening and closing balances of intangibles (2008-09).

| Item | Computer software \$'000 | Total \$'000 |
|--|--------------------------------|-----------------|
| As at 1 July 2008 | | |
| Gross book value | 564 | 564 |
| Accumulated depreciation/amortisation and impairment | (388) | (388) |
| Net book value 1 July 2008 | 176 | 176 |
| Additions: | | |
| By purchase or internally developed | 40 | 40 |
| Revaluations and impairments through equity | 65 | 65 |
| Revaluations recognised in the operating result | (46) | (46) |
| Impairments recognised in the operating result | | - |
| Amortisation | (29) | (29) |
| Disposals: | | |
| Other disposals | 0 | 0 |
| Net book value 30 June 2009 | 206 | 206 |
| Net book value as of 30 June 2009 represented by: | | |
| Gross book value | 256 | 256 |
| Accumulated depreciation/amortisation and impairment | (50) | (50) |
| | 206 | 206 |

Table B: Reconciliation of the opening and closing balances of intangibles (2007-08).

| Item | Computer software \$'000 | Total \$'000 |
|--|--------------------------------|-----------------|
| As at 1 July 2007 | | |
| Gross book value | 506 | 506 |
| Accumulated depreciation/amortisation and impairment | (332) | (332) |
| Net book value 1 July 2007 | 174 | 174 |
| Additions: | | |
| By purchase or internally developed | 63 | 63 |
| Amortisation | (61) | (61) |
| Disposals: | | |
| Other disposals | - | - |
| Net book value 30 June 2008 | 176 | 176 |
| Net book value as of 30 June 2008 represented by: | | |
| Gross book value | 564 | 564 |
| Accumulated depreciation/amortisation and impairment | (388) | (388) |
| | 176 | 176 |

Note 7: Payables

| | |
|--------|--------|
| 2009 | 2008 |
| \$'000 | \$'000 |

Note 7A: Suppliers

| | | |
|------------------------|--------------|--------------|
| Trade creditors | 1,441 | 1,969 |
| Total suppliers | 1,441 | 1,969 |

All supplier payables are current liabilities.

Settlement is usually made net 30 days.

Note 7B: Other Payables

| | | |
|-----------------------------|--------------|--------------|
| Consultancies and Grants | 1,076 | 1,051 |
| Joint Ventures | 526 | 1,189 |
| Salaries and wages | 371 | 150 |
| Other | 93 | 49 |
| Total Other Payables | 2,066 | 2,439 |

Other payables are represented by:

| | | |
|-----------------------------|--------------|--------------|
| Current | 1,988 | 1,752 |
| Non-current | 78 | 687 |
| Total Other Payables | 2,066 | 2,439 |

Note 8: Non- Interest Bearing Liabilities

| | |
|--------|--------|
| 2009 | 2008 |
| \$'000 | \$'000 |

Note 8A: Loans

| | | |
|-----------------------|--------------|------------|
| Loans from Government | 1,500 | 540 |
| Total loans | 1,500 | 540 |

Maturity schedule for loans:

Payable:

| | | |
|-------------------------|--------------|------------|
| In one to five years | - | - |
| In more than five years | 1,500 | 540 |
| Total loans | 1,500 | 540 |

Loan information:

The Loan was provided in 2007-08 by the Queensland Government Department of Tourism, Regional Development and Industry, with repayments commencing after 10 years. There is no interest payable on the loan.

For further information re loan from Government refer Note 11.

Note 9: Provisions

| | 2009 | 2008 |
|---|--------------|--------------|
| | \$'000 | \$'000 |
| Note 9A: Employee Provisions | | |
| Annual Leave | 2,429 | 2,307 |
| Long service leave | 2,763 | 2,588 |
| Superannuation | 513 | 516 |
| Workers compensation | 22 | 21 |
| Fringe benefit tax | - | 54 |
| Total employee provisions | 5,727 | 5,486 |
| Employee provisions are represented by: | | |
| Current | 5,380 | 5,218 |
| Non-current | 347 | 317 |
| Total employee provisions | 5,727 | 5,486 |

The classification of current employee provisions includes amounts for which there is not an unconditional right to defer settlement by one year, hence in the case of employee provisions the above classification does not represent the amount expected to be settled within one year of the reporting date. Employee provisions expected to be settled in twelve months from the reporting date are \$1,891,398 (2008: \$1,906,000), and in excess of one year \$3,835,285 (2008: \$3,580,000).

Note 10: Cash Flow Reconciliation

| | 2009 | 2008 |
|--|---------------|---------------|
| | \$'000 | \$'000 |
| Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement | | |
| Report cash and cash equivalents as per: | | |
| Cash Flow Statement | 16,751 | 12,823 |
| Balance Sheet | 16,751 | 12,823 |
| Difference | - | - |
| Balance Sheet comprises of: | | |
| Cash and cash equivalents | 144 | 474 |
| Investments | 16,607 | 12,349 |
| Total | 16,751 | 12,823 |

Reconciliation of operating result to net cash from operating activities:

| | | |
|---|--------------|--------------|
| Operating result | | |
| Depreciation /amortisation | 2,649 | 9,766 |
| Gain on disposal of assets | 6,044 | 5,698 |
| Loss on /disposal of assets | (21) | (481) |
| Write-Down and Impairment of Asset | 660 | 100 |
| (Increase) / decrease in net receivables | 2,593 | - |
| (Increase) / decrease in inventories | (2,261) | (3,604) |
| (Increase) / decrease in other assets | (31) | 10 |
| Increase / (decrease) in employee provisions | (64) | (153) |
| Increase / (decrease) in supplier payables | 241 | (921) |
| Increase / (decrease) in other provisions | (528) | (2,459) |
| Net cash from / (used by) operating activities | (373) | 263 |
| | 8,909 | 8,220 |

Note 11: Contingent Liabilities and Assets

Quantifiable Contingencies

The schedule of contingencies reports contingent assets in respect of Tenix Pty Ltd of \$304,212 (2008: \$304,212) for the security on the design, construction, sale and delivery of the Scientific Research Vessel.

The schedule also reports contingent asset in respect of OTIS Elevator Company Pty Ltd of \$2,200 (2008: \$2,200) for the lift modernisation at AIMS.

A contingent asset of \$500,000 is reported in respect of a non-current liability funded by the Queensland Government Department of Tourism, Regional Development and Industry for \$1.5m. This is a forgiveness amount providing certain criteria is met over the next 5 years.

Unquantifiable Contingencies

At 30 June 2009, AIMS is not aware of any material unquantifiable contingencies.

Note 12: Directors Remuneration

| | 2009 | 2008 |
|---|-------------------|-------------------|
| The number of directors of AIMS included in these figures are shown below in the relevant remuneration bands: | | |
| \$Nil - \$14,999 | - | 2 |
| \$15,000 - \$29,999 | 5 | 3 |
| \$30,000 - \$44,999 | 1 | 1 |
| \$285,000 - \$299,999 | - | 1 |
| \$350,000 - \$364,999 | 1 | - |
| Total number of directors of AIMS | 7 | 7 |
| Total remuneration received or due and receivable by directors of AIMS | \$ 511,161 | \$ 450,831 |

The Directors (members of council) of AIMS 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 13: Related Party Disclosures

| | 2009 \$'000 | 2008 \$'000 |
|--|----------------|----------------|
|--|----------------|----------------|

Loans to Directors and Director-Related Entities

There were no loans made to any Director or Director-related entities during the period (2008: Nil)

Other transactions with directors or director-related entities

There were no other transactions with Directors or Director related entities during the period (2008: Nil).

Note 14: Executive Remuneration

| | 2009 No. | 2008 No. |
|---|------------------|------------------|
| The number of senior executives who received or were due to receive total remuneration of \$130,000 or more: | | |
| \$145 000 to \$159 999 | 1 | 1 |
| \$190 000 to \$204 999 | 1 | 1 |
| \$220 000 to \$234 999 | - | 1 |
| \$235 000 to \$249 999 | 1 | - |
| Total | 3 | 3 |
| The aggregate amount of total remuneration of senior executives shown above. | \$615,163 | \$585,215 |
| The aggregate amount of separation and redundancy/termination benefit payments during the year to executives shown above. | Nil | Nil |
| The Chief Executive Officer's remuneration is included in Note 12, Directors Remuneration. | | |

Note 15: Remuneration of Auditors

| | 2009 \$'000 | 2008 \$'000 |
|---|----------------|----------------|
| Financial statement audit services are provided to AIMS by the Auditor-General. | | |
| The fair value of the services provided was: | | |
| Audit Services | 46 | 47 |
| | 46 | 47 |
| No other services were provided by the Auditor-General. | | |

Note 16 Financial Instruments

| | |
|--------|--------|
| 2009 | 2008 |
| \$'000 | \$'000 |

Note 16A: Categories of Financial Instruments

Financial Assets

Held-to-maturity:

| | | |
|-------------|---------------|---------------|
| Investments | 16,607 | 12,349 |
| | <u>16,607</u> | <u>12,349</u> |

Loans and receivables:

| | | |
|------------------------------------|--------------|--------------|
| Cash at bank | 138 | 468 |
| Receivables for goods and services | 9,295 | 6,821 |
| | <u>9,433</u> | <u>7,289</u> |

Carrying amount of financial assets

| | |
|---------------|---------------|
| <u>26,040</u> | <u>19,638</u> |
|---------------|---------------|

Financial Liabilities

Other Financial Liabilities

| | | |
|--------------------------|--------------|--------------|
| Trade creditors | 1,441 | 1,969 |
| Consultancies and grants | 1,076 | 1,051 |
| Joint ventures | 526 | 1,189 |
| Loans from government | 1,500 | 540 |
| | <u>4,543</u> | <u>4,749</u> |

Carrying amount of financial liabilities

| | |
|--------------|--------------|
| <u>4,543</u> | <u>4,749</u> |
|--------------|--------------|

Note 16B: Net Income and Expense from Financial Assets

Held-to-maturity

| | | |
|--------------------------------|-------|-------|
| Interest revenue (see Note 3C) | 1,469 | 1,259 |
|--------------------------------|-------|-------|

| | | |
|---|--------------|--------------|
| <i>Net gain/(loss) held-to-maturity</i> | <u>1,469</u> | <u>1,259</u> |
|---|--------------|--------------|

Loans and receivables

| | | |
|-----------------------|---|----|
| Exchange gains/(loss) | - | 16 |
|-----------------------|---|----|

| | | |
|--|----------|-----------|
| <i>Net gain/(loss) loans and receivables</i> | <u>-</u> | <u>16</u> |
|--|----------|-----------|

Net gain/(loss) from financial assets

| | |
|--------------|--------------|
| <u>1,469</u> | <u>1,243</u> |
|--------------|--------------|

Note 16C: Net Income and Expense from Financial Liabilities

Other Financial Liabilities

| | | |
|------------------|----|----|
| Interest expense | 37 | 79 |
|------------------|----|----|

| | | |
|---|-----------|-----------|
| <i>Net gain/(loss) from financial liabilities</i> | <u>37</u> | <u>79</u> |
|---|-----------|-----------|

Note 16 Financial Instruments (cont.)

Note 16D: Fair Value of Financial Instruments

| | Carrying amount 2009 \$'000 | Fair value 2009 \$'000 | Carrying amount 2008 \$'000 | Fair value 2008 \$'000 |
|--|--------------------------------------|---------------------------------|--------------------------------------|---------------------------------|
| FINANCIAL ASSETS | | | | |
| Cash at Bank | 138 | 138 | 468 | 468 |
| Receivables for goods and services (net) | 9,295 | 9,295 | 6,674 | 6,674 |
| Investments | 16,607 | 16,607 | 12,349 | 12,349 |
| Total | 26,040 | 26,040 | 19,491 | 19,491 |

| | Carrying amount 2009 \$'000 | Fair value 2009 \$'000 | Carrying amount 2008 \$'000 | Fair value 2008 \$'000 |
|------------------------------|--------------------------------------|---------------------------------|--------------------------------------|---------------------------------|
| FINANCIAL LIABILITIES | | | | |
| Trade Creditors | 1,441 | 1,441 | 1,969 | 1,969 |
| Consultancies and grants | 1,076 | 1,076 | 1,051 | 1,051 |
| Joint Ventures | 526 | 526 | 1,189 | 1,189 |
| Loans from Government | 1,500 | 1,500 | 540 | 540 |
| Total | 4,543 | 4,543 | 4,749 | 4,749 |

Note 16 Financial Instruments (cont.)

Note 16E Credit Risk

AIMS is exposed to minimal credit risk as the majority of loans and receivables are cash or amounts owed by the Australian Taxation Office in the form of a Goods and services Tax refund.

AIMS total exposure is equal to the total amount of loans and receivables of \$9,295,000 in 2009: (2008: \$6,821,000)

AIMS manages its credit risk by entering into contracts with external parties prior to establishing a debtor relationship.

The following table illustrates AIMS gross exposure to credit risk, excluding any collateral or credit enhancements.

| | 2009 \$'000 | 2008 \$'000 |
|------------------------------------|----------------|----------------|
| Financial assets | | |
| Receivables for goods and services | 9,295 | 6,821 |
| | | |
| Total | 9,295 | 6,821 |

AIMS holds no collateral to mitigate against credit risk.

Credit risk of financial instruments not past due or individually determined as impaired

| | Not past due nor impaired 2009 \$'000 | Not past due nor impaired 2008 \$'000 | Past due or impaired 2009 \$'000 | Past due or impaired 2008 \$'000 |
|------------------------------------|---|---|--|---|
| Investments | 16,607 | 12,349 | | - |
| Cash at bank | 138 | 468 | | - |
| Receivables for goods and services | 5,199 | 5,384 | 4,097 | 1,437 |
| Total | 21,944 | 18,201 | 4,097 | 1,437 |

Ageing of financial assets that are past due but not impaired for 2009

| | 0 to 30 days \$'000 | 31 to 60 days \$'000 | 61 to 90 days \$'000 | 90+ days \$'000 | Total \$'000 |
|--------------|---------------------------|----------------------------|----------------------------|-----------------------|-----------------|
| Receivables | | 3,314 | 509 | 273 | 4,097 |
| Total | - | 3,314 | 509 | 273 | 4,097 |

Ageing of financial assets that are past due but not impaired for 2008

| | 0 to 30 days \$'000 | 31 to 60 days \$'000 | 61 to 90 days \$'000 | 90+ days \$'000 | Total \$'000 |
|--------------|---------------------------|----------------------------|----------------------------|-----------------------|-----------------|
| Receivables | - | 830 | 9 | 598 | 1,437 |
| Total | - | 830 | 9 | 598 | 1,437 |

Note 16 Financial Instruments (cont.)

Note 16F: Liquidity Risk

AIMS financial liabilities are payables, consultancies and grants, joint ventures and loans from government. The exposure to liquidity risk is based on the notion that AIMS will encounter difficulty in meeting its obligations associated with financial liabilities. This is highly unlikely due to the appropriation funding available to AIMS. The following table illustrates the maturities of financial liabilities.

Maturities for financial liabilities 2009

| | On demand 2009 \$'000 | within 1 year 2009 \$'000 | 1 to 2 years 2009 \$'000 | 2 to 5 years 2009 \$'000 | > 5 years 2009 \$'000 | Total 2009 \$'000 |
|--------------------------|--------------------------------|------------------------------------|-----------------------------------|-----------------------------------|--------------------------------|-------------------------|
| Trade creditors | - | 1,441 | - | - | - | 1,441 |
| Consultancies and grants | | 1,076 | | | | 1,076 |
| Joint Ventures | | 526 | | | | 526 |
| Loans from Government | | | | | 1,500 | 1,500 |
| Total | - | 3,043 | - | - | 1,500 | 4,543 |

Maturities for financial liabilities 2008

| | On demand 2008 \$'000 | within 1 year 2008 \$'000 | 1 to 2 years 2008 \$'000 | 2 to 5 years 2008 \$'000 | > 5 years 2008 \$'000 | Total 2008 \$'000 |
|--------------------------|--------------------------------|------------------------------------|-----------------------------------|-----------------------------------|--------------------------------|-------------------------|
| Trade creditors | - | 1,969 | - | - | - | 1,969 |
| Consultancies and grants | | 1,051 | | | | 1,051 |
| Joint Ventures | | 502 | 687 | | | 1,189 |
| Loans from Government | | | | | 540 | 540 |
| Total | - | 3,522 | 687 | - | 540 | 4,749 |

AIMS receives appropriation funding from the Australian Government. AIMS manages its budgeted funds to ensure it has adequate funds to meet payments as and when they fall due. In addition, AIMS has Policies in place to ensure timely payments are made when due and has no past experience of default.

Note 16G: Market Risk

AIMS holds basic financial instruments that do not expose AIMS to certain market risks. AIMS is moderately exposed to 'currency risk' but is not exposed to 'other price risk' or interest rate risk'.

| | | Change in risk variable | Effect on | |
|--------------------|---------------|-------------------------------|--------------------------------------|--------------------------|
| | | | Profit and loss 2009 \$'000 | Equity 2009 \$'000 |
| | Risk variable | % | | |
| Currency risk | - | - | - | - |
| Interest rate risk | - | - | - | - |
| Other price risk | - | - | - | - |

Note 17: Appropriations

Table A: Acquittal of Authority to Draw Cash from the Consolidated Revenue Fund for Ordinary Annual Services Appropriations

| Particulars | Departmental Outputs | | Total | |
|--|----------------------|----------------|----------------|----------------|
| | 2009 \$'000 | 2008 \$'000 | 2009 \$'000 | 2008 \$'000 |
| Balance brought forward from previous period | - | - | - | - |
| Appropriation Act: | | | | |
| Appropriation Act (No.1) 2008-9 | - | 26,645 | - | 26,645 |
| Total appropriation available for payments | - | 26,645 | - | 26,645 |
| Cash payments made during the year (GST inclusive) | | (26,630) | | (26,630) |
| Appropriations credited to Special Accounts (excluding GST) | - | - | - | - |
| Balance of Authority to Draw Cash from the Consolidated Revenue Fund for Ordinary Annual Services Appropriations | - | (26,630) | - | (26,630) |
| Represented by | | | | |
| Amount to be corrected in 2009-10 Additional Estimates Process | | 15 | - | 15 |
| Departmental appropriations receivable | - | - | - | - |
| Total | - | 15 | - | 15 |

Aims is not directly appropriated as it is a CAC Act body. Appropriations are made to the Department of Innovation, Industry, Science and Research which then pay the monies to AIMS.

Note 18: Reporting of Outcomes

Note 18A: Net Cost of Outcome Delivery

| | Outcome 1 | |
|--|---------------|---------------|
| | 2009 | 2008 |
| | \$'000 | \$'000 |
| Expenses | | |
| Departmental | 47,045 | 36,299 |
| Total expenses | 47,045 | 36,299 |
| Costs recovered from provision of goods and services to the non-government sector | | |
| Other external income | | |
| Sales of goods and rendering services | 18,324 | 13,258 |
| Interest | 1,469 | 1,259 |
| Revenue from joint ventures | 148 | 121 |
| Other Revenue | 2,106 | 4,316 |
| Total other external income | 22,047 | 18,954 |
| Net cost/(contribution) of outcome | 24,998 | 17,345 |

Outcome 1 is described in Note 1.1. Net costs shown include intra-government costs that are eliminated in calculating the actual Budget Outcome.

Note 18B: Major Classes of Departmental Income and Expenses by Output Groups and Outputs

| | Output Group 1 | |
|--|----------------|---------------|
| | 2009 | 2008 |
| | \$'000 | \$'000 |
| Outcome 1 | | |
| Departmental expenses | | |
| Employees | 18,966 | 15,151 |
| Suppliers | 18,379 | 14,877 |
| Depreciation and amortisation | 5,992 | 5,698 |
| Write-down and impairment of assets | 2,593 | - |
| Expenditure on joint ventures | 160 | 378 |
| Interest | 37 | 79 |
| Foreign exchange losses | - | 16 |
| Losses from asset sales | 660 | 100 |
| Write-down and impairment of investments | 258 | |
| Total departmental expenses | 47,045 | 36,299 |
| Funded by: | | |
| Departmental income | | |
| Revenue from Government | 27,626 | 26,630 |
| Sale of goods and rendering of services | 18,324 | 13,258 |
| Interest | 1,469 | 1,259 |
| Revenue from Joint Ventures | 148 | 121 |
| Other revenue | 2,106 | 4,316 |
| Total departmental income | 49,673 | 45,584 |

Outcome 1 is described in Note 1.1. Net costs shown include intra-government costs that are eliminated in calculating the actual Budget outcome.

SUPPLEMENTARY FINANCIAL INFORMATION (UNAUDITED)

| | 2009 | 2008 |
|--|--------|--------|
| | \$'000 | \$'000 |

Joint Ventures

Arafura Timor Research Facility Joint Venture

AIMS has taken up its 50% share of investment

Income Statement

| | | |
|---|------|-------|
| Revenue from joint venture | 148 | 64 |
| Expenditure from Joint Venture | 159 | 375 |
| Net operating (loss)/surplus from joint venture | (11) | (311) |

Represented:

Balance Sheet

| | | |
|----------------------|----|----|
| Cash in bank | 82 | 23 |
| Accounts receivable | 12 | 30 |
| Total current assets | 94 | 53 |

| | | |
|----------------------------|-------|-------|
| Building | 1,673 | 1,673 |
| Motor vehicles | - | 11 |
| Provision for Depreciation | (182) | (130) |
| Total non current assets | 1,490 | 1,554 |

| | | |
|--------------------------------------|--------------|--------------|
| Total included in AIMS equity | 1,585 | 1,607 |
|--------------------------------------|--------------|--------------|

SUPPLEMENTARY FINANCIAL INFORMATION (UNAUDITED)

Revenue comparison

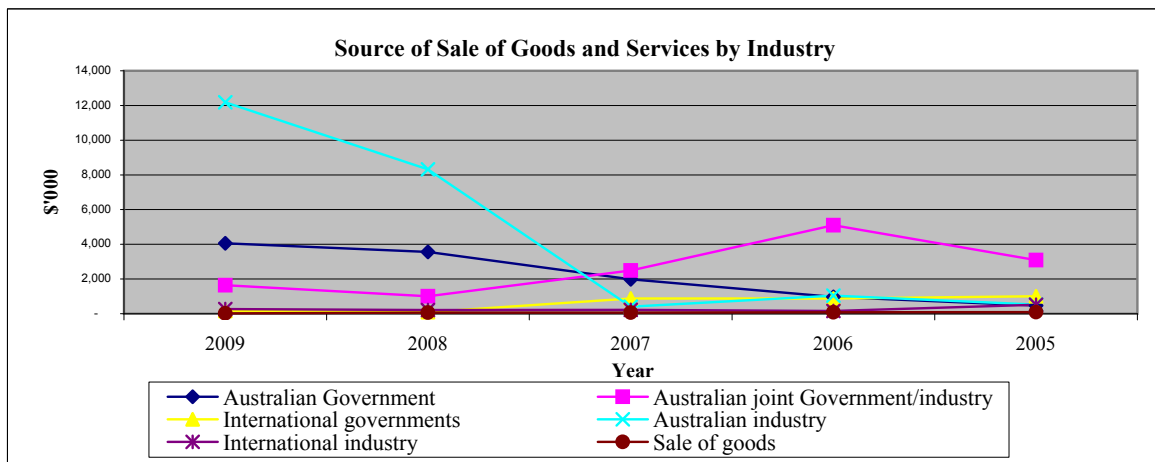
| | 2009 \$'000 | 2008 \$'000 | 2007 \$'000 | 2006 \$'000 | 2005 \$'000 |
|---|----------------|----------------|----------------|----------------|----------------|
| Appropriation revenue | | | | | |
| Operating | 22,069 | 21,073 | 18,913 | 18,469 | 18,160 |
| Asset replacement | 5,557 | 5,557 | 5,557 | 4,656 | 4,323 |
| Capital and infrastructure | | | - | - | - |
| Capital use charge | | | - | - | - |
| Total appropriation revenue | 27,626 | 26,630 | 24,470 | 23,125 | 22,483 |
| Non-appropriation revenue | | | | | |
| Sale of goods and rendering of services | 18,324 | 13,258 | 6,040 | 8,228 | 5,689 |
| Interest | 1,469 | 1,259 | 1,267 | 1,060 | 985 |
| Revenues from joint ventures | 148 | 121 | 365 | 996 | 2,696 |
| Other revenue | 2,105 | 4,316 | 2,841 | 167 | 109 |
| Total non-appropriation revenue | 22,047 | 18,954 | 10,513 | 10,451 | 9,479 |
| Total Revenue | 49,673 | 45,584 | 34,983 | 33,576 | 31,962 |
| Non-appropriation ratio | 44% | 42% | 30% | 31% | 30% |

Sale of goods and rendering of services includes consultancies, grants and contract collaborations.

Non-appropriation ratio is percentage non-appropriation revenue of total revenue.

Source of sale of goods and rendering of services

| | | | | | |
|--------------------------------------|---------------|---------------|--------------|--------------|--------------|
| Australian Government | 4,055 | 3,562 | 1,980 | 971 | 466 |
| Australian joint Government/industry | 1,646 | 1,006 | 2,489 | 5,098 | 3,093 |
| International governments | 153 | 93 | 880 | 875 | 1,005 |
| Australian industry | 12,185 | 8,317 | 407 | 1,042 | 524 |
| International industry | 268 | 212 | 220 | 158 | 512 |
| Sale of goods | 17 | 68 | 64 | 84 | 89 |
| | 18,324 | 13,258 | 6,040 | 8,228 | 5,689 |



SUPPLEMENTARY FINANCIAL INFORMATION (UNAUDITED)

Cost of Output by Research Teams

| | Variable \$'000 | Salaries \$'000 | Depreciation \$'000 | Overheads \$'000 | Total \$'000 |
|--|--------------------|--------------------|------------------------|---------------------|-----------------|
| Assessing and Using Marine Biodiversity | 8,513 | 6,392 | 361 | 12,360 | 27,626 |
| Measuring Water Quality and Ecosystem Health | 1,315 | 2,273 | 337 | 4,395 | 8,320 |
| Responding to Climate Change | 2,136 | 1,465 | 477 | 2,832 | 6,910 |
| Understanding Marine Microbes and Symbioses | 698 | 1,137 | 154 | 2,200 | 4,189 |
| Total | 12,662 | 11,267 | 1,329 | 21,787 | 47,045 |

APPENDICES

- ◆ Appendix 1. Legislative Foundation and Ministerial Powers
- ◆ Appendix 2. National Research Priorities
- ◆ Appendix 3. Performance Indicators
- ◆ Appendix 4. Science Publications 2008
- ◆ Appendix 5. Membership of External Committees
and Non-Government Organisations
- ◆ Appendix 6. Freedom of Information Statement

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 cooperate 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. The Finance Minister may give directions at any time as to amount and moneys to be paid to the Institute (Section 36(2));
6. Out of money appropriated by the Parliament for the purpose, the Finance Minister has power to lend money to the Institute (Section 42A);
7. The Finance Minister has the power to provide written approval for the Institute to borrow money from persons other than the Commonwealth (Section 42B);
8. The Finance Minister has the power to guarantee borrowings of the Institute (Section 42C); and
9. Appointing a Committee to assist Council and approving the terms and conditions of members (Section 45).
10. Delegation of powers by Finance Minister
 - (1) The Finance Minister may, by written instrument, delegate to an official (within the meaning of the Financial Management and Accountability Act 1997) the power:
 - (a) to approve the provision of guarantees as mentioned in paragraph 10(2) (hb); or
 - (b) to approve the borrowing of money on terms and conditions specified in, or consistent with, the approval as mentioned in subsection 42B(1); or
 - (c) to enter into contracts as mentioned in subsection 42C(1); or
 - (d) to make determinations as mentioned in subsection 42C(2).
 - (2) In exercising power under a delegation, the official must comply with any directions of the Finance Minister.

2. NATIONAL RESEARCH PRIORITIES

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 of 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 on 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 (R&D) 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.

3. PERFORMANCE INDICATORS

Regular review of performance and capabilities is a critical component of planning and continuous improvement at AIMS. The Institute's reporting framework sets goals for performance against a range of research and organisational criteria. Performance against agreed targets (AIMS Key Performance Goals) is reviewed regularly by the Management group and Council and is reported annually to Parliament in AIMS' Annual Report (see pages 51-72).

KEY PERFORMANCE GOALS

| | KEY PERFORMANCE GOALS | MEASURE/INDICATOR | Frequency |
|---|---|--|--------------------|
| Science quality | | | |
| Scientific publications | Transfer new knowledge generated by AIMS and its collaborators through high quality scientific publications in high impact journals and relevant user-focused publications. | <ul style="list-style-type: none"> Number of peer reviewed scientific publications reported quarterly against previous year Trend in publication level | Annual |
| Citation analysis | Ongoing improvement in the quality and impact of AIMS' journal publications | <ul style="list-style-type: none"> Retrospective citation analysis using Science Citation Index | 5 yearly |
| Increase science capacity | Increase in number of post-doc positions. Target is annual average of 10 FTEs (by 2009) | <ul style="list-style-type: none"> Number of research scientists and postdocs | Annual |
| External assessment and review | Ongoing improvement of AIMS' research performance. | <ul style="list-style-type: none"> Expert review of the quality and impact of AIMS' Research Performance | Within quadrennium |
| Enhancing impact/relationships | | | |
| Joint ventures | Enhance impact and research capacity through co-investment in research | <ul style="list-style-type: none"> Joint ventures and current status | Annual |
| Leverage through collaboration | Maintain and focus AIMS' collaborative approach to research | <ul style="list-style-type: none"> Collaborations (collaborative research projects) and significant outputs Number of collaborations and percentage of research papers from collaborations | Annual |
| Enhance Australia's future capabilities in marine science | Contribution to teaching | <ul style="list-style-type: none"> Students, completions and significant outputs reported quarterly Number of jointly supervised postgraduate students (PhD and Masters, with trend) Number of internships and undergraduates (with trend). | Annual |
| Effective use of resources | | | |
| Project management | Timely delivery of project milestones | <ul style="list-style-type: none"> Percentage of milestones completed on time. | Annual |

| | KEY PERFORMANCE GOALS | MEASURE/INDICATOR | Frequency |
|---|--|---|-----------|
| Operational efficiency | Improve efficiency of (providing) key support | <ul style="list-style-type: none"> Number of continuous improvement projects completed | Annual |
| Strategic alliances | Enhance research delivery by the development and maintenance of alliances with organisations that complement AIMS skills and infrastructure. | <ul style="list-style-type: none"> Strategic alliances and current status. | Annual |
| Organisational growth | | | |
| Increase revenue | Increase revenue to support investment in AIMS' research. | <ul style="list-style-type: none"> Trend in total revenue reported annually. | Annual |
| Enhance core capabilities | Attract and retain key 'talent' through staff satisfaction | <ul style="list-style-type: none"> Report examples of actions taken and improvements achieved. | Annual |
| Develop staff | Seek improvements to integration of staff training into organisations goals | <ul style="list-style-type: none"> Report examples of actions taken and improvements achieved. | Annual |
| Technology diffusion | | | |
| Transfer to users | Enhance user uptake of AIMS research | <ul style="list-style-type: none"> Practices, instruments and processes developed by AIMS that have been adopted by users in industry, government and the community. | Annual |
| Funding mix / Source of revenue | Enhance engagement with industry | <ul style="list-style-type: none"> External earnings reported against previous year Trend in external earnings and source of funds | Annual |
| Health, Safety and Environmental Performance | | | |
| Safety index | Improved safety culture | <ul style="list-style-type: none"> Report against indicators and provide examples of improvements | Annual |
| Reduce environmental footprint | Ongoing improvements to AIMS' operations to reduce our environmental footprint. | <ul style="list-style-type: none"> Report examples of actions taken and improvements achieved. | Annual |

4. SCIENCE PUBLICATIONS

2008

JOURNAL ARTICLES

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- Smith, Luke D (2008) Resilience and recovery of an isolated reef system following a catastrophic mortality event. Thesis (PhD), James Cook University. (awarded)
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5. AIMS SCIENTISTS' MEMBERSHIP OF EXTERNAL COMMITTEES AND NGOS

INTERNATIONAL FORUMS

Association of Official Analytical Chemists (AOAC) Presidential Task Force on Marine and Freshwater Toxins
Arafura Timor Seas Expert Forum (ATSEF) - Steering Committee
Convention on Biological Diversity's Panel of Experts on Access and Benefit Sharing - Australian rep
Census of Marine Life - International Scientific Steering Committee (Chair)
FAO Steering Committee on Holothurian Fishing
Great Barrier Reef Foundation - International Scientific Advisory Committee (ISAC)
Global Environment Fund, Coral Disease Working Group
International Atomic Energy Agency (Expert Consultant to United Nations Development Project 'Transfer of Receptor Binding Assay for Harmful Algal Toxins')
International Marine Biotechnology Association - Board Member
International Marine Biotechnological Association - International Conference Committee
International Society for Microbial Ecology - Board Member
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
World Bank Coral Reef Restoration and Remediation Working Group

DOMESTIC FORUMS

AIMS@JCU - Management Committee
Antarctic Science Advisory Committee (ASAC) - Chair
Antarctic Research Assessment Committee (ARAC) Life Sciences - Chair
Arafura Timor Research Facility (ATRF) Governance Group
Australian Biodiscovery Workshop Group (Commonwealth, States and Territories) of the Biotechnology Liaison Committee
Australian Biotechnology Advisory Committee
Australian Fisheries Management Authority Northern Shark Stock Assessment Group
Australian Government Department of the Environment, Heritage, Water and the Arts - National Shark Recovery Group
Australian Government Department of the Environment, Heritage, Water and the Arts - BioIndustry Panel
Australian Marine Sciences Association (AMSA) National Executive (Secretary)
Australian Marine Sciences Association (AMSA) NT President
Australian National Sportfishing Association (ANSA) Scientific Research Foundation
Australian Ocean Data Centre Joint Facility
Australian Research Council, Centre of Excellence for Coral Reef Studies, Advisory Board
Australian Research Council Oz Reader
Australian Research Council INTREADER

Australian Society for Microbiology - National Examinations Board
 Australian Society for Microbiology - National Science Advisory Committee
 Bioscience North Australian Science Advisory Committee
 CERF Marine Biodiversity Hub - Management Team
 Coastal and Reef Assets (Fitzroy Basin Association) Expert Panel
 Commonwealth Inter-departmental Committee on Access to Genetic Resources
 Darwin City Council Environmental Management Plan Advisory Committee
 Darwin Harbour Research Advisory Committee, Environmental Research Group
 Dredging Expert Panel (Pluto Project, WA)
 FRDC Prawn Domestication Steering Committee
 Great Barrier Reef Foundation - Attributes of a Sustainable Reef Working Group
 Great Barrier Reef Foundation – Solutions & Adaptation Working Group
 Great Barrier Reef Ocean Observing System - Node Leader
 GBROOS Technical Reference Group
 Great Barrier Reef Water Quality Consensus Taskforce
 GBRMPA Reef Water Quality Protection Plan (RWQPP) Project Committee
 GBRMPA Conservation, Heritage and Indigenous Partnerships Reef Advisory Committee
 James Cook University Marine and Aquaculture Research Facilities Committee
 Integrated Marine Observing System (IMOS) Board
 Integrated Marine Observing System (IMOS) Steering Committee
 IMOS Australian National Moorings Network Facility
 IMOS Facility for Automated Intelligent Monitoring of Marine Systems (FAIMMS)
 Marine Stinger Advisory Committee - Research Working Group
 Marine and Tropical Sciences Research Facility (MTSRF) Great Barrier Reef Steering Committee
 Marine and Tropical Sciences Research Facility (MTSRF) GBR Operations Committee
 Marine and Tropical Sciences Research Facility (MTSRF) Torres Strait Program Steering Group
 Marine Turtle Expert Panel (Gorgon Project, WA)
 National Centre for Tropical Wetlands Management
 National Facilities Ship Scientific Advisory Committee
 NT Fisheries Research Advisory Board
 NT Government - Mt Todd Mine Site Rehabilitation Reference Group
 Oceans Policy Science Advisory Group (OPSAG)
 Palm Island Sponge Farming Steering Committee
 Queensland Biotechnology Advisory Committee
 Queensland Biotechnology Advisory Committee for Environmental Biotechnology
 Queensland Transport Pacific Adventurer Oil Spill Response Scientific Advisory Committee
 QDPI&F TrawlMac Science Advisory Group - Chair
 QDPI&F TrawlMac - Member
 Reef and Rainforest Research Centre Pty Ltd - Board of Directors
 Reef Check Australia Scientific Advisory Committee
 Rio Tinto Alcan Melville Bay Marine Health Monitoring Program Advisory Team
 South East Queensland Expert Advisory Panel on Water Recycling
 Torres Strait Scientific Advisory Committee
 TropLinks - Board member
 Twin Cities Fish Stocking Society – Scientific Adviser
 WA Physical Oceanographic Coordinating Group (WAPOCG)
 Western Australian Global Ocean Observing System (WAGOOS)
 Western Australian Marine Science Institution (WAMSI) Board
 Western Australian Marine Science Institution (WAMSI) R&D Committee
 Yorke Island Sponge Farm Business Planning Group

6. 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 in pages iv, and 75-76 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.

General enquiries 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.

GLOSSARY

ACRONYMS AND ABBREVIATIONS

| | |
|----------|--|
| ABARE | Australian Bureau of Agricultural and Resource Economics |
| ACIAR | Australian Centre for International Agricultural Research |
| AIMS | Australian Institute of Marine Science |
| AIMS Act | <i>Australian Institute of Marine Science Act 1972</i> |
| ANAO | Australian National Audit Office |
| ANU | Australian National University |
| APA | Annual Performance Agreement |
| ARC | Australian Research Council |
| ATOVs | Advanced TIROS Operational Vertical Sounder |
| ATSEF | Arafura Timor Sea Experts Forum |
| ATRF | Arafura Timor Research Facility |
| AusAID | Australian Government overseas aid program |
| BNA | Biosciences North Australia |
| BOM | Bureau of Meteorology |
| CAC Act | <i>Commonwealth Authorities and Companies Act 1997</i> |
| CDU | Charles Darwin University |
| CERF | Commonwealth Environment Research Facilities Program |
| COAG | Council of Australian Governments |
| CoML | Census of Marine Life |
| CEO | Chief Executive Officer |
| CMMG | Centre for Marine Microbiology and Genetics Research, AIMS |
| COTS | Crown-of-thorns starfish |
| CRC | Cooperative Research Centre |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| DEC | Western Australian Department of Environment and Conservation |
| DEMG | Dredge Environmental Management Group |
| DEWHA | Australian Government Department of the Environment, Water, Heritage and the Arts |
| DFAT | Australian Government Department of Foreign Affairs and Trade |
| DIISR | Australian Government Department of Innovation, Industry, Science and Research |
| EAP | Employee Assistance Program |
| EDS | Electronic Data Systems |
| EEO | Equal Employment Opportunity |
| EEZ | Exclusive Economic Zone |
| EMP | Environmental Management Plan |
| EPBC | Environment Protection and Biodiversity Conservation Act 1999 |
| ESI | Essential Science Indicators |
| FAICD | Fellow of the Australian Institute of Company Directors |
| FAIM | Fellow of the Australian Institute of Management |
| FAO | Food and Agriculture Organization of the United Nations |
| FAusIMM | Fellow of Australasian Institute of Mining and Metallurgy |
| FOI Act | <i>Freedom of Information Act 1982</i> |
| FRDC | Fisheries Research and Development Corporation |

| | |
|----------|--|
| FTSE | Fellow of the Australian Academy of Technological Sciences and Engineering |
| GBR | Great Barrier Reef |
| GBRMPA | Great Barrier Reef Marine Park Authority |
| GBROOS | Great Barrier Reef Ocean Observing System |
| GA | Geoscience Australia |
| GBRWHA | Great Barrier Reef World Heritage Area |
| HSE | Health, Safety and Environment |
| IA | Intellectual asset |
| ICP | Investment Capital Partners |
| IMOS | Integrated Marine Observing System |
| IP | Intellectual property |
| IPCC | Intergovernmental Panel on Climate Change |
| ISI | Institute for Scientific Information |
| ISSNIP | ARC Research Network for Intelligent Sensors, Sensor Networks and Information Processing |
| JCU | James Cook University |
| KPGs | Key Performance Goals |
| KRAs | Key Result Areas |
| LNG | Liquified natural gas |
| LPG | Liquid petroleum gas |
| LTMP | Long Term Monitoring Program, AIMS |
| MMP | Marine Monitoring Program |
| MPAs | Marine Protected Areas |
| MTSRF | Marine and Tropical Sciences Research Facility |
| NCRIS | National Collaborative Research Infrastructure Strategy |
| NDT | Northern Development Taskforce |
| NLRD | Notifiable Law Risk Dealing |
| NOAA | US National Oceanic and Atmospheric Administration |
| NRETA | Ningaloo Reef Environmental Tracking Array |
| NRPs | National Research Priorities |
| OECD | Organisation for Economic Cooperation and Development |
| OH&S Act | <i>Occupational Health and Safety (Commonwealth Employment) Act 1991</i> |
| OPSAG | Oceans Policy Science Advisory Group |
| QCIP | Queensland Cyber-Infrastructure Foundation |
| QDPI&F | Queensland Department of Primary Industries and Fisheries |
| QEPA | Queensland Environmental Protection Agency |
| QM | Queensland Museum |
| R&D | Research and development |
| RRRC | Reef and Rainforest Research Centre Limited |
| RV | Research vessel |
| RWQPP | Reef Water Quality Protection Plan |
| SEG | Scientific Experts Group on Climate Change |
| SRRP | Scott Reef Research Project |
| TAFE | Technical and Further Education (Queensland Government) |
| UNCLOS | United Nations Convention on the Law of the Sea |
| UNDP | United Nations Development Program |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNSW | University of New South Wales |
| UQ | University of Queensland |
| UWA | University of Western Australia |
| WAMSI | Western Australian Marine Science Institution |
| WHA | World Heritage Area |

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