

Australian Government



AUSTRALIAN INSTITUTE OF MARINE SCIENCE

# 2010-11

**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 media@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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TOWNSVILLE DARWIN PERTH

15 September 2011

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 39th Annual Report for the year ended 30 June 2011. 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 2010-11 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 on 15 September 2011.

Yours sincerely

Mr Wayne Osborn Chairman Australian Institute of Marine Science

En R. Pamin

Dr lan Poiner Chief Executive Officer Australian Institute of Marine Science

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# Snapshot of the Year



Great Detached Reef. Image: Ray Berkelmans.

AIMS' researchers, often working in association with collaborators from national and international organisations, achieved significant success in a wide range of fields including new species discovery, technology development, climate change impacts and adaptation, reef water quality, marine microbiology, sustainable marine resource use and support for industry (see Highlights p 17-26).

The delivery of the 2007-2011 Research Plan was completed. A panel of international and Australian scientists reviewed AIMS' performance, and confirmed it as a leading national and international research institute. The 2011-2015 AIMS Research Plan will focus on AIMS' research strengths and end-user needs, such as the impacts of climate change, ocean acidification, and tropical oceans water quality on tropical marine ecosystems; understanding the richness of northern Australia's marine biodiversity and importance of microscopic biota to health and productivity of coral reefs and the waters that surround them. AIMS will be a major contributor to three of the five research hubs announced under the National Environmental Research Program (NERP), highlighting the importance of tropical marine science. AIMS is also taking a leadership role in developing and implementing the second stage of the Western Australian Marine Science Institution (WAMSI) announced in the Western Australia Budget 2011.

Significant progress was made on the Australian Government funded AIMS Tropical Marine Research Facilities Project, with completion of the project scheduled for March 2013. AIMS' role as a major partner in the development of the Indian Ocean Marine Research Centre (IOMRC) demonstrated a continued commitment to tropical marine research to support sustainable development of marine resources in Western Australia and the Indian Ocean. Completion of the Scott Reef Research Project illustrated AIMS' ongoing commitment to provide the burgeoning northwest Australia oil and gas sector with independent marine science.

AIMS continued its significant contribution to scientific knowledge with 115 peer reviewed scientific publications. This is slightly down on last year because of time dedicated to the development of major new science programs and it was a transition year for students and post-doctoral fellows (see p 38-39). This decrease in publication number will be overturned in 2011 as we have already seen that our publication number in the coming year will be the most productive in our history as we passed the 100 published articles mark by the middle of the year. Despite the drop in absolute publication number in 2010, on a per capita basis the publication rate was 3.3 journal articles per research scientist - almost twice that of other Australian

# Our Performance

#### **Publication Trends** Number of publications 120 100 80 60 33 31 20 5 2006 2007 2008 2010 Journal articles Books and book chapters Other (includes theses) Conference papers Reports (Technical & Client)

science agencies that track this statistic. Analyses of quality and influence of journal publications indicated that 84 per cent appeared in the top quartile of science journals and almost half were in the top 10 per cent (see p 38). Our commitment to collaboration was demonstrated by the fact that only 13 per cent of our 2010 publications were authored solely by AIMS' staff. Of the remaining collaborative peer-reviewed papers, 44 per cent recognised co-authors at other Australian research organisation while 43 per cent involved international colleagues.

AIMS' staff led, or contributed to, more than a dozen national and international research steering committees and provided input for significant government inquiries, including the Montara Commission of Inquiry and the Queensland Government Judicial Inquiry into the 2010-11 Southeast Queensland Floods (see p 19). AIMS' research, conducted in association with other research providers in the Marine and Tropical Sciences Research Facility, was used to inform GBRMPA Water Quality Guidelines; the "Scientific consensus statement on water quality in the Great Barrier Reef" published by ReefPlan; the GBRMPA Outlook Report 2009 and the Reef Rescue and Queensland Reef Regulations. New information from AIMS' research projects was made available to the aquaculture industry and is being used to inform industry users of the Darwin Harbour about the likely effects of future activities. Data from our automatic weather stations located throughout the GBR are now publicly available. The Q-IMOS network recorded the destructive progress of Tropical Cyclone *Yasi* during February 2011, providing an insight into the environmental conditions encountered by marine ecosystems during such extreme events. The Integrated Marine Observing System (IMOS) continued to grow with expanded operations in Queensland and Western Australia contributing additional momentum.

AIMS continued to support and add value to regional, state, national and international research and stakeholder partnerships, such as the International Census of Marine Life and the Commonwealth Environment Research Facilities program, and contributed to the establishment of new arrangements including the North Australian Marine Research Alliance and the National Environmental Research Program.

AIMS had collaborations with colleagues from 114 organisations in 23 countries. The collaborative research was conducted in 18 countries.



AIMS was involved in research projects being carried out by 74 postgraduate students, and supported 15 occupational trainees, highlighting AIMS' commitment to developing the next generation of marine scientists.

Over 91 per cent of our milestones were completed as contracted. Setbacks which could not be mitigated were due to bad weather such as tropical cyclones with the Townsville site preparing for, closed or recovering from Cyclone *Yasi* for much of February 2011, infrastructure damage and constraints beyond staff control, and delayed delivery by collaborators and/or suppliers. In each case, acceptable alternative arrangements were successfully negotiated with the external party (or parties).

#### **Total revenue**

AIMS' total revenue increased marginally when compared to previous years with a slightly smaller proportion of nonappropriation revenue.



#### **Co-investment revenue**

The first chart below illustrates co-investment (external revenue) over the past five years and the second chart shows the breakdown of co-investment funding during 2010-11 (representing 31 per cent of total revenue). The major risk currently facing AIMS is a shortfall in base funding due to rising costs beyond our control that are not adequately catered for within indexation of our appropriation revenue. This is compounded by a general reduction in the level of funding provided to co-invested research programs.

The Institute's overall staffing level decreased to 211 (by head count) during 2010-11 due mainly to completion of external contract work. However, additional staff were recruited for the Response to Climate Change team. A detailed breakdown of staff numbers and EEO status by head count as at 30 June 2011 is provided at page 66.







# -About AIMS



RV *Solander* at anchor, mouth of South Alligator River, Northern Territory. Image: Steve Clarke.

# Our mission: "To generate and transfer knowledge to support the sustainable 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.

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, aquaculture and maritime infrastructure such as ports and harbours have benefitted from AIMS' research which is geared towards the sustainable management of marine resources.

These benefits will underwrite protection of Australia's marine ecosystems, and new areas of the economy into the future.

#### **Our people**

AIMS employs about 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 communications 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 co-funded postdoctoral positions and PhD scholarships as part of the AIMS@JCU, North Australian Marine Research Alliance (NAMRA) and the AIMS/CSIRO/University of Western Australia joint ventures.

#### **Our research**

AIMS' headquarters near Townsville is adjacent to the centre of the GBR and surrounded by national park and marine reserve. It is free from development, biosecure and has access to clean seawater and a protected harbour. With the injection of Australian Government infrastructure funding, the Institute is greatly expanding its research facilities at all three sites - Townsville, Perth and Darwin. The construction of the \$35 million National Sea Simulator (SeaSim) at Cape Ferguson will provide unprecedented ability to extend global understanding of the impacts of climate change and ocean acidification. New vessel berthing facilities are also being built in Townsville. AIMS' Northern Territory research is based at the Arafura Timor Research Facility (ATRF) adjacent to the campuses of Charles Darwin University (CDU) and the Australian National University. A

Australian Institute of Marine Science Annual Report 2010-2011\_



new \$5.5 million building and aquarium facility at the ATRF will enable more joint research with its Northern Territory-based collaborators, under the banner of NAMRA, the North Australian Marine Research Alliance. In Western Australia, AIMS is co-located with UWA Oceans Institute at the University's Crawley campus in Perth. AIMS and CSIRO have partnered with UWA in development of the Indian Ocean Marine Research Centre. This \$63 million facility is being partly funded with a \$34 million grant from Round 3 and the Sustainability Round of the Australian Government's Education Investment Fund.

# **Our facilities**

AIMS' facilities include:

- O modern chemistry, biology, microbiology, oceanography and remote sensing laboratories
- O a range of analytical facilities including a sophisticated biomolecular analysis facility
- access to the Queensland Integrated Marine Observing System (Q-IMOS) and West Australian Integrated Marine Observing System (WA-IMOS) as well as AIMS observing infrastructure at GBR, Scott Reef and Ningaloo Reef in Western Australia
- O the AIMS Data Centre, providing online interactive visualisation and access to high value research data
- O seawater aquaria and controlled environment rooms
- O a microbiological and genetic research facility
- weather stations deployed at various marine locations
- O engineering workshops for the development of instrumentation required for research activities
- O an extensive library and information centre containing current and historical marine science information
- a bioresource library
- an aquaculture centre
- O an X-band satellite receiver
- O the AIMS Coral Core Archive

AIMS' field activities are supported by a research fleet that 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 Australian waters. AIMS' major vessels are equipped with a wide range of facilities for long research trips, such as:

- O on-board dive compressors including a dive chamber on the RV Solander to provide diving support
- A-frame, hydrographic and CTD winches
- wet and dry laboratories
- flow-through aquaria
- large deck spaces
- inflatable tenders
- O sophisticated navigation, satellite communication and computing facilities

During the reporting period, AIMS conducted 196 field trips, 90 of which involved activities aboard AIMS' vessels. In 2010, 117 trips involved diving and snorkelling and 3473 SCUBA and SSBA dives were undertaken.

#### **Vessel statistics:**

RV Solander	24 research trips; 297 research days in the field; steamed approx 35, 117NM
RV Cape Ferguson	23 research trips; 257 research days in the field; steamed approx 16, 048NM
RV Apollo	34 research trips totalling 40 days
RV Aquila	6 research trips totalling 24 days
RV Capricornus	3 research trips totalling 39 days











#### 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 on 15 September 2011.

Mr Wayne Osborn Chairman Australian Institute of Marine Science

En R. Pamin

Dr Ian Poiner Chief Executive Officer Australian Institute of Marine Science

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# **Report of Operations** –Report by the Chairman of AIMS Council, Mr Wayne Osborn



Surveying octocorals for CReefs at Lizard Island. Image: Katharina Fabricius.

It has been a year of significant achievement, change and development for AIMS and I would like to acknowledge all involved for their invaluable contribution to this outcome.

Major milestones have been reached with 30 June 2011 marking the end of the delivery phase of the 2007-11 Research Plan and the beginning of the 2011-2015 Research Plan.

Enduring through these plans is the realisation that expanding the frontiers of marine science is now more important to life on this planet than it has ever been. Our greatest challenges and perhaps our greatest hopes lie with the world's oceans.

AIMS' work in areas such as climate change and its impacts on our tropical oceans is contributing to a global body of knowledge that will guide generations to come.

We have completed the 2007-2011 Research Plan and are now at the beginning of the 2011-2015 Research Plan. During 2010, AIMS' researchers produced 115 peer reviewed articles. Whilst we will continue to focus on crucial research, such as the impacts of greenhouse gas emissions on ocean acidification, and tropical oceans water quality, the new Research Plan provides the opportunity to consider and shape our future, given some serious constraints. The understanding that the work of our researchers and scientists is making a difference provides the foundation for all of the deliberations of the AIMS Council.

This year also marks the end of the tenure of AIMS' CEO of the past seven years, Dr Ian Poiner. I would like to take this opportunity to thank Ian for his substantial contribution to AIMS as well as to Australian and international marine science. There is no doubt Ian's great intellect and seamless relationships with both the private sector and government have made a major contribution to AIMS continuing to be one of the leading tropical marine science research agencies in the world.

During lan's leadership, the Australian Government has commited \$55 million for the AIMS Tropical Marine Research Facilities Project. This landmark project is a major investment in our Townsville facility and a significant commitment in the Northern Territory. Work is now well underway on the innovative National Sea Simulator on the Townsville site.

lan's leadership role in the historic Census of Marine Life assisted in AIMS' involvement in CReefs, resulting in the discovery of 1200 new, undescribed species on coral reefs in Queensland and Western Australia.



His understanding of the importance of collaboration resulted in AIMS leveraging "more bang for its buck" on numerous occasions, and he has fostered a culture of collaboration that is now imbued throughout the organisation. During lan's tenure the number of peer reviewed scientific publications has increased significantly as has the number of early career scientists, particularly post doctoral fellows. Under his stewardship, AIMS commissioned a new research vessel, the RV *Solander*, currently based in WA. Through his leadership AIMS' role as Australia's tropical marine research agency has been strengthened across the entire northern half of Australia, with our bases in Perth and Darwin growing significantly.

I have no doubt that a leader of lan's calibre will continue to make a major contribution to Australia's, and indeed, the world's efforts to understand its marine endowment and what drives, supports and impacts tropical marine ecosystems. We wish him all the best for the future.

The major challenge facing AIMS at this point in its history is a shortfall in base funding due to significant cost inflation not being matched by indexation of our appropriation revenue and a general reduction in the level of funding provided to co-invested research programs. Whilst it is acknowledged that other government agencies are operating in the same tight fiscal environment, AIMS' situation is made more difficult by being one of the only national research agencies with a high proportion of our activities in remote tropical Australia. Average indexation of AIMS' budget over the past 10 years was 1.4 per cent per annum while Consumer Price Index (CPI) was 3.2 per cent per annum. This shortfall has greater impact because even full CPI does not meet the increasing costs of delivering research. For example, over this 10 year period the price of unleaded petrol has increased by 74.6 per cent, electricity by 55.7 per cent and vessel management by 111 per cent.

I continue to be impressed with the calibre and dedication of our people. It is to the great credit of AIMS' research and support staff that we have been able to expand our presence in the Northern Territory and Western Australia in particular, given our funding restrictions. AIMS' enhanced focus on providing research outcomes relevant to the needs of the rapidly expanding resources sector of North West Australia and the Northern Territory is of particular pride to the AIMS Council. We have world-class experts developing the theoretical knowledge and practical applications to ensure sustainable management of our tropical marine domain. We have researchers and staff who provide national and international leadership within their field of marine science. They have sought out collaborations and co-funding opportunities that have extended and multiplied the impacts of their work. Our partnerships provide vital leverage to ensure our work reaches where it is needed most.

AIMS' commitment to training and development of early career researchers is helping to ensure that Australia has the scientific expertise required to keep Australia at the forefront of international efforts to better understand the complexities of the tropical marine world.

The future is not without challenge, however I am confident that AIMS will continue to deliver relevant, cutting-edge marine science outcomes that address in a contemporary manner, the conservation needs and economic potential of Australia's tropical marine resources.



# Report by the CEO of AIMS, Dr Ian Poiner



Close up of coral polyps. Image: Jurgen Freund.

It is pleasing to report at the end of my tenure as CEO of AIMS, that the Institute is well-positioned for the commencement of an important new phase, with our role as an international leader in tropical marine research, further consolidated and strengthened.

## **Research Plan**

The conclusion of the 2007-2011 Research Plan was a significant milestone for AIMS. We invited an independent panel of Australian and international scientists to evaluate delivery of the 2007-2011 Research Plan and sought their insights on future opportunities. The independent panel confirmed AIMS as a leading national and international research institute; an institute undertaking excellent research highly regarded by the users of our science. It highlighted areas where AIMS could extend its influence and make better use of its research. It also confirmed AIMS was well-placed to further extend its trajectory in setting international benchmark levels.

The beginning of a new AIMS Research Plan is a valuable window of opportunity to shape our future. In developing the 2011-2015 AIMS Research Plan, we continued to listen and respond swiftly to the needs of government, industry and the community. AIMS climate change and ocean acidification research has contributed scientific rigour to the broad and complex community dialogue on these subjects. For example, a paper by Dr Janice Lough published in the prestigious scientific journal, *Paleoceanography*, showed the frequency of extreme rainfall events in tropical Australia has increased since the late 19th century. She used the AIMS Coral Core Archive – the world's most comprehensive long coral core collection – to extrapolate her work. Dr Katharina Fabricius's paper on natural  $CO_2$  seeps in Papua New Guinea and their impacts on tropical coral reef ecosystems is the first international scientific paper to present data on how these ecosystems have responded to elevated  $CO_2$  levels. It was published in *Nature Climate Change*.

AIMS' expertise was further acknowledged by the international scientific community with the appointment of AIMS' scientist, Dr Dan Alongi to the Intergovernmental Panel on Climate Change (IPCC) working group on coastal wetlands.

Throughout the often politically-charged atmosphere of the debate surrounding climate change, AIMS has maintained its commitment to report its peer-reviewed scientific results in an open and accountable manner. Our reputation is built on the rigour of our science. We will continue to present nothing but verifiable data and analysis which government, industry and the community can utilise to support the development of sound policy, conservation and the sustainable development of Australia's precious tropical marine resources.



# **Tropical Marine Research Facilities Project**

Significant progress has been made over the past 12 months on the \$55 million AIMS Tropical Marine Research Facilities Project, funded by the Australian Government.

We are now upgrading the seawater infrastructure for the \$35 million National Sea Simulator, construction of which was officially launched by the Minister, Senator Kim Carr. This unique addition to the national research infrastructure will give Australian and international researchers capacity to accurately control parameters such as temperature, acidity, salinity, sedimentation and contaminants in large volumes of seawater and/or high numbers of replications. It is expected to be complete by March 2013. The facility for improved storage, access and utilisation of AIMS' Coral Core Archive and the National Marine Bioresources Library at Cape Ferguson, Townsville, is scheduled for completion in April 2012. Both of these resources are growing in international importance and are vital to AIMS' ongoing research. AIMS is also constructing a vessel berthing and operations facility within the new light commercial marine precinct at Townsville Port.

Expansion of AIMS' Arafura Timor Research Facility in Darwin, at a cost of \$5.5 million is also well under way, with completion due by February 2012. It will provide a hub for the North Australian Marine Research Alliance (NAMRA), a collaboration between AIMS, Charles Darwin University, Northern Territory Government and the Australian National University, for enhanced marine science capacity and capability to support sustainable coastal development and management in the Northern Territory. NAMRA will support new post-doctoral researchers and PhD students to work on areas of joint interest and priority for the Northern Territory.

## Marine science expertise for oil and gas sector

In Perth, AIMS continues to expand its role in providing independent tropical marine science expertise to the growing WA oil and gas sector, an important contributor to national wealth and prosperity. The sector is growing rapidly yet there is an enormous gap in baseline knowledge about the marine environment in which it operates, notably the Carnarvon, Browse and Bonaparte gas basins of North West Australia.

AIMS has made a significant contribution to knowledge about the northwest Australian marine environment through the Scott Reef Research Project, completed this year. The 5-year project is the largest baseline environmental study undertaken by AIMS for the oil and gas industry. The project, costing over \$30 million, has provided new insights into the biodiversity, dynamics and resilience of a unique atoll system off northwest Australia, and has been a key source of information for the Browse Joint Venture operated by Woodside Energy in its ongoing plan for the development of resources in the area. The expansion of the oil and gas industry also highlights the importance of knowledge to support ports and shipping in the northwest shelf region and the sustainable management of the sensitive ecosystems of the surrounding marine environment.

Detailed plans are now being developed for the construction of a \$63 million facility to house the Indian Ocean Marine Research Centre (IOMRC), following the successful bid by University of Western Australia (UWA), CSIRO and AIMS for Australian Government funding, and WA State Government support.

IOMRC will promote and coordinate joint research initiatives in WA, especially through support of post-doctoral and PhD students. AIMS, CSIRO and UWA have already appointed seven post-doctoral researchers to work on areas of joint interest.

## **Census of Marine Life**

In October 2010, I participated in the release of the first Census of Marine Life (CoML) in London in my role as Chair of the CoML International Scientific Steering Committee. The release of the first Census was a historic milestone in global science. After 10 years of research and information assembly by experts the world over, the Census assessed what humankind knows about the oceans, what we don't know, and what we may never know. It was the most complex collaboration ever undertaken in marine



biology with more than 2700 Census scientists from 80 countries involved. Over the decade more than 2600 academic papers were published. That equates to one paper published every 1.5 days. AIMS played a key role with Dr Julian Caley leading the CReefs Australia Project (one of the 16 individual Census projects). CReefs Australia discovered 1200 new species living on Australian coral reefs. In June I was thrilled to hear the International Cosmos Prize honoured the blue world by awarding the 2011 Prize to the International Scientific Steering Committee of the Census of Marine Life. The Prize is awarded for research that has achieved excellence and is recognised as contributing to a significant understanding of the relationships among living organisms, the interdependence of life and the global environment, and the common nature integrating these relationships. In October I will travel to Japan to receive the award on behalf of the Committee.

WAMSI (the Western Australian Marine Science Institution) is a collaboration of State Government and Australian Government agencies, industry and academic bodies researching climate change, biodiversity, sustainable fisheries, biotechnology and oceanography. The original WAMSI Partnership Agreement expired in 2011 but the partners indicated their desire for renewal. Therefore, I welcomed the news that the WA Government 2011 Budget provided initial funding for an extension of WAMSI for a further six years. The marine environment of WA is crucial to our national prosperity and it is important that we continue to gather knowledge about these environments for their sustainable management now and in the future.

## Cyclone Yasi

AIMS' location in northern Australia gives it the ability to move quickly to investigate impacts of natural and man-made disturbances on tropical marine environments. Tropical Cyclone *Yasi,* the largest cyclone system to strike the North Queensland coast, made landfall on February 3, 2011. AIMS' headquarters at Cape Ferguson, Townsville was designated a cyclone evacuation point during Tropical Cyclone *Yasi.* Local residents from nearby properties (and their pets) sought refuge in the main building.

When Tropical Cyclone *Yasi* careened through North Queensland, the Q-IMOS network recorded its destructive progress even though some of the equipment was damaged. The Q-IMOS data is still being analysed to fully understand the driving forces behind what has been one of the most dramatic climatic years on record. The events seen in South-East and North Queensland, along with others around the Pacific Rim, show the need for routine long-term observations to understand what drives these events, what impact they have and what they mean for the long term sustainability of our coastal systems.

AIMS' ability to respond quickly to, and provide follow-up advice about disturbances on the tropical marine environments was also evidenced during the Montara (West Atlas) oil leak which began in August 2009. AIMS provided immediate assistance and emergency advice about coral reefs, and an assessment of nearby banks and shoals for PTT Exploration and Production in 2010. This was followed up with more detailed studies of corals, fish, and other benthic organisms on reefs, banks and shoals in 2011.

# Leadership

One of the things I am most proud of is the leadership role AIMS has played in marine science both within Australia and internationally. AIMS continues to lead the North Australian Marine Research Alliance (NAMRA) with AIMS' Science Leader in the Northern Territory, Professor David Parry, holding the role of Director of the Alliance. AIMS' Science Communication Group has also taken a national leadership role in the establishment of the Ocean and Coastal Communicators Network (OCCN) – a consortium of marine communicators focused on development of a coordinated approach to profiling marine issues. AIMS' Science Communication Manager, Mr Steve Clarke co-chairs the Network. The group will develop recommendations to support the objectives of Inspiring Australia – the Australian Government's framework for public engagement in science and innovation. In further recognition of AIMS' leadership, Dr Peter Doherty was appointed Science Leader for the Tropical Ecosystems Hub of the National Environmental Research Program (NERP). AIMS' expertise was also recognised with the appointment of Dr Mark Meekan to the Advisory Committee for the Save Our Seas Foundation, with responsibility for projects in the Indian Ocean and South East Asia. Still on the international stage, Dr Richard Brinkman was invited to join the Science



Planning Committee for the 'Beyond2010' activities of the Census of Marine Life to develop a framework for a scientific program to build on the success of the Census. This program is known as "Life in a Changing Ocean", and will integrate scientific data and report findings across four interrelated and interconnected cornerstone themes. Richard is co-theme leader of the "Biodiversity Observation Theme".

Dr Lyndon Llewellyn was appointed as the Australian member of the International Oceanographic Commission Intergovernmental Panel on Harmful Algal Blooms.

Closer to home, Dr Diane Brinkman and Dr Lyndon Llewellyn were made members of the Research Working Group of the Queensland Government Marine Stinger Advisory Group Committee. Dr Britta Schaffelke joined expert panels on ecosystem and water quality monitoring in the Fitzroy Partnership Science Panel, Paddock to Reef Monitoring Program and the Mackay Whitsunday Healthy Waterways Alliance Ecosystem.

I continued to hold the position of Chair of the Ocean Policy Science Advisory Group (OPSAG) whose members work collaboratively to promote coordination and information sharing between Australian Government marine science agencies and across the broader Australian marine science community. AIMS hosted the Chair and Secretariat for 2010-11 and will continue to do so for 2011-12.

OPSAG provides advice to ministers, Australian Government agencies and advisory groups on priorities for national marine research and research infrastructure investment.

## **Integrated Marine Observing Systems (IMOS)**

Major outcomes for the year included the delivery of three full years of data from the IMOS Great Barrier Reef moorings; the completion of the sensor network sites with over 19 million real time observations collected; full processing and delivery of the underway vessel data and the transition of the Darwin National Reference Station to real time, the second in Australia.

There was also key expansion into new areas, specifically in Northern Australia. The installation of a series of ocean moorings, from Joseph Bonaparte Gulf to Timor Leste, will help fill critical gaps in our understanding of how water flowing through Indonesia impacts regional climate, and productivity and ocean outcomes down the coast of Western Australia and how this area acts to link the East and West Coast systems. There will be further expansion of WA-IMOS in the coming year with the announcement of \$6 million in the 2011 WA Budget to support ocean moorings off the Kimberley coast and Dampier. Q-IMOS was expanded to Moreton Bay where, in conjunction with the University of Queensland, sensors were deployed that captured the recent Brisbane floods. The year saw the first deployment of an ocean glider in the Coral Sea. The glider can operate for months at a time, undertaking programmed transits. It provided a greater volume of data in three months than had been collected from vessels in the previous ten years.

#### **Developments since 30 June 2011**

Negotiations have begun between management and staff on the 2012-2015 AIMS Enterprise Agreement. Minister Carr visited AIMS' headquarters in Townsville to launch the start of works on the National Sea Simulator.





# Conclusion

The past seven years, as CEO of AIMS, have been the most rewarding time of my career. It has been a pleasure and honour to work with the AIMS community of scientists and support staff. I have seen revolutions – most notably a technological revolution - in marine science that has taken us further in our understanding of marine life, than ever thought possible. Our ability to measure, monitor and visualise the ocean in near real time is unprecedented. Through novel DNA technologies we are learning that the number of marine organisms invisible to the eye exceeds all expectations and we are gaining a better understanding of their key role in marine ecosystems. I can say with great pride, that AIMS has often been at the forefront of emerging science in the tropical marine domain. In spite of this, we have only scratched the surface. There is no doubt about the urgent need for marine science as pressure grows on our oceans, seas and coasts. As I hand the baton to a new CEO, I urge leaders, policy makers, researchers, stakeholders and those of us who simply love the ocean, to continue to support the quest for greater discovery. It is only through discovery that we can truly understand and sustainably manage the most precious resource of the planet.

CReefs manager Shawn Smith studies a map during a night trip. Image: Susan Graham.



# Highlights



A shrimp of the family Palamonidae. Image: Gary Cranitch.

# Reef census discovers more than one thousand likely new species

A four-year project led by AIMS concluded in 2010 after discovering more than a thousand likely new species living on Australian coral reefs. CReefs Australia entailed a total of nine scientific expeditions to coral reefs and was a partnership between AIMS, BHP Billiton, the Great Barrier Reef Foundation, and the Census of Marine Life.

The Census of Marine Life was a 10-year international effort involving scientists from 80 nations in a global effort to document what lives in the sea - a task never before attempted on this scale. The historic and prize-winning Census was delivered in London in October 2010.

CReefs Australia brought together 60 researchers from 25 scientific Australian and international organisations to expand our knowledge of Australian coral reef biodiversity. In total, the researchers collected over 26,000 specimens of plants and animals from 850 sites on Lizard Island, Heron Island and Ningaloo Reef, discovering over 1,200 undescribed species. This new knowledge will be included in future conservation targets and contribute to more informed management of coral reef ecosystems in a changing world.

CReefs Australia was a finalist in the 2010 Eureka Prizes (Environment section) and the United Nations Australia Association World Environment Day Awards.



## **Domesticated lobsters reach second generation**

A female ornate rock lobster born and reared in the seawater precinct of AIMS' headquarters in Townsville has hatched eggs to produce the second generation of lobsters fully reared in captivity.

Lobsters, also known as crayfish, are very difficult to breed in captivity because of a long and complex larval stage that involves more than a dozen moults between egg and juvenile over many months. Since these animals normally develop in oceanic nurseries far from the coast, land-based aquaculture requires special attention to water quality and suitable diets.

Despite the difficulty posed by their complex life cycle, lobsters are a high-value product with huge established markets in Asia and hence high potential to enhance economic activity and employment in regional Australia. The production of a second generation animal demonstrates that these animals can be fully domesticated and opens the way to selective breeding, where desirable traits are bred into captive lineages.

This latest advance was built on AIMS' expertise in crustacean husbandry, microbiology and nutrition. Previous benchmarks include spawning lobsters "on demand" rather than seasonally, identification and control of a new microbial disease, and rearing of larvae on formulated artificial diets (a break-through reported last year). The net result of passing these milestones is the production of the first second-generation animals and current efforts are based around scaling up the level of success.



Ornate rock lobster larvae. Image: Mike Hall.

## **Robotic mission explores the Coral Sea**

The longest unmanned, remotely-controlled voyage yet undertaken in Australian waters was completed in 2010 by an ocean glider that had spent 149 days measuring the properties of seawater in the Coral Sea.

Seagliders are autonomous vehicles designed to profile the water column in a zig-zag (down and up) pattern by changing their buoyancy. At each surfacing, they fix their position using GPS and transmit that and other data ashore via a communication satellite. If there is any need to alter the mission, for example straying off course due to unexpected currents, the onshore operator can command the glider to alter its trim on the next and subsequent dives.

The first Seaglider deployed in the Coral Sea is one small part of Australia's Integrated Marine Observing System (IMOS), which is an initiative of the Australian Government funded through the National Research Infrastructure Strategy (NCRIS). The glider was launched from an AIMS vessel near Townsville (19°S) and recovered five months later near Lizard Island (14°S). Its mission was controlled from the opposite side of the continent by operators at the IMOS National Facility for Ocean Gliders run by the University of Western Australia.



The Coral Sea is one of the most sparsely sampled marine environments in the world, leaving a significant gap in data and knowledge. Between launch and recovery, the Seaglider travelled 2,977 kilometres and made 768 dives to depths of one kilometre measuring key ocean variables such as temperature, salinity, plankton productivity, water turbidity and dissolved oxygen. This one glider mission has produced more data from this region than all previous research surveys put together, and at very much lower cost per observation.

The data gathered by sustained observing of the Coral Sea using multiple gliders will answer practical questions such as how ocean variability affects Australia's climate and marine ecosystems. For example, Queensland's recent summer of extreme events (floods and cyclones) was clearly connected with the strong La Nina of 2010-11 (see next highlight). In addition to rainfall and storminess, variations in heat transport from the Pacific Ocean are likely to drive the risk of mass coral bleaching on the Great Barrier Reef.

## Queensland's summer of extreme weather (floods and cyclones)

The El Nino-Southern Oscillation (ENSO) cycle is a quasi-periodic alternation of climate states across the tropical Pacific Ocean on timescale of 2-7 years that underlies Australia's classic cycle of droughts and floods.

For most of 2010-11, the climate remained in a strong La Nina state which is characterised by heavy rainfall and high sea surface temperatures in the western Pacific. As a result, Queensland experienced devastating floods in January that spared little of the state, resulting in huge economic costs and tragic loss of life. In north Queensland, the Burdekin River which drains the largest catchment in Queensland is estimated to have emptied 27 million megalitres (a volume in excess of 50 Sydney Harbours) of silt-laden waters into the Great Barrier Reef lagoon entering just 100 km south of Townsville. The IMOS National Reference Station located in coastal waters to the northeast of the river mouth recorded the passage of low salinity flood plumes with high loads of sediments and nutrients that fuelled algal blooms with impacts on light levels and oxygen. On the few unclouded moments, satellites captured images of discoloured water containing dissolved organic matter extending hundreds of kilometres from the river mouth and 20-50 km from the coast.

At the end of January, Severe Tropical Cyclone *Yasi* began as a tropical low near Fiji but intensified to a Category 5 system as it crossed the Coral Sea towards the Queensland Coast making landfall near Mission Beach on 3 February. According to the Bureau of Meteorology, TC *Yasi* was one of the most powerful cyclones to have affected Queensland since records commenced with events of similar magnitude previously recorded only in 1899 and 1918.

Even though Townsville was well south of the belt of very destructive winds, the IMOS equipment deployed across the shelf near AIMS recorded the extreme nature of this disturbance on the local marine environment. Wind gusts of 180 km/h were recorded on the mid-shelf and wave heights of 9-10 metres were recorded in the GBR Lagoon. A mooring in 70m of water was tilted to 45 degrees (they are normally vertical) by the currents forced through the outer reef matrix while instruments recorded a turbidity storm as bottom sediments were mixed throughout the entire water column. A deeper mooring on the continental slope showed surface waters typical of the top 20m at 190m as the cyclone passed over head. AIMS' oceanographers believe this was caused by the cyclone pushing a wave of water onto the continental shelf that could only escape by flowing backwards at high velocity along the bottom.

From the end of the wet season, the Great Barrier Reef Marine Park Authority began to record a marked increase in the numbers of dead dugongs and turtles washing ashore in the region with empty guts and diminished fat reserves. This was attributed to the loss of shallow seagrass beds caused by the extensive flooding. In June, AIMS mounted a joint mission with the IMOS AUV Facility based at Sydney University to survey deep water seagrass beds with an autonomous underwater vehicle equipped for high resolution benthic photography. In 2005-06, the Great Barrier Reef Seabed Biodiversity Project showed extensive seagrass beds in 30m depths in the middle of the GBR Lagoon. In 2010-11, after the summer of extreme weather, extensive searching of these historical sites using the AUV found no seagrasses and everywhere low levels of large animal life.



Future surveys will monitor the rate of recovery of the seabed communities. Meanwhile, turtle experts are worried about the long-term impact of the loss of so many Green Turtles (a 700 per cent increase on average strandings) on the future resilience of their populations.

#### **Queensland climate becoming more extreme**

As Queensland coped with the impacts of the 2010-11 Wet Season, research undertaken by AIMS showed that the frequency of extreme rainfall events has increased since the late 19<sup>th</sup> century.

In a paper accepted in the prestigious scientific journal, *Paleoceanography*, Dr Janice Lough, an expert in climate change science explained how her latest research on the subject supports predictions that tropical rainfall will become more variable in a warming world.

AIMS owns Australia's most comprehensive library of coral cores, from long-lived Porites corals on the Great Barrier Reef.

The cores have annual bands, similar to tree rings. They give a record of the ocean environment throughout the coral's life, dating back several centuries, before weather and climate were monitored with rain gauges and thermometers.

Combining the records from many long coral cores from the Great Barrier Reef has allowed AIMS to reconstruct summer rainfall in northeast Queensland back to the late 17<sup>th</sup> century – providing over 300 years of records to examine past climate variability and change.

This new reconstruction shows that the 1973-74 summer wet season was the wettest of the past three centuries although instrument records show that the 2008-09 and 2010-11 seasons come a close second and third.

Queensland rainfall is characterised by very high variability. Extreme wet and extreme dry events have always occurred. However, the evidence now suggests that those events are occurring more frequently than in earlier centuries, often with devastating effects (see previous highlight).

Dr Lough's research finding was submitted to the Queensland State Government's inquiry into the floods of December 2010/ January 2011.

## New discoveries from coral cores in Western Australia

AIMS has an internationally significant collection of long cores from long-lived massive corals collected from the Great Barrier Reef that represent coral growth histories over the past few hundred years and allow reconstructions of past tropical reef



Cutting a *Porites* core, Rowleys Shoals, WA. Image: Eric Matson.



environments and climates before the availability of instrumental records (see previous Highlight). In 2010-11, the Institute collected complementary sets of cores from corals in Western Australia for the eventual purpose of creating a unified marine climatology for all of northern Australia.

The WA collections ranged from massive corals living at Ashmore Reef, 800km west of Darwin, to colonies living at the Houtman Abrolhos Islands, located 70 km offshore of Geraldton in Western Australia. The latter are the most southerly reefs in the Indian Ocean and, before the visit, were considered marginal for coral reef growth under prevailing ocean temperatures.

Preliminary analysis of calcification variations over the past 110 years, a time period covered by instrumental records of sea surface temperature (SST), has been completed for 27 cores from six reef sites between 17°S to 28°S.

The cores from Western Australia have shown no evidence of the decadal decline in calcification rates from 1980 that was previously reported in the same species of coral from the Great Barrier Reef (De'ath et al., 2009). Since 1900, calcification rates have shown no significant change at three sites (including the Rowley Shoals where the rate of SST warming has been relatively small). This means that that declining calcification observed among GBR corals is most likely due to the repeated heat stresses on this system experienced since the first mass coral bleaching episode observed in 1998 rather than due to changing ocean chemistry which would be expected to have a more even effect around the continent.

Cores from two sites (Coral Bay  $\sim$  23°S and the Houtman Abrolhos  $\sim$  28°S), have shown a significant increase in calcification rates over the past century that matches the observed warming of SSTs observed at these southerly locations.

## Natural gas seeps give insights to coral reef futures

Two research expeditions to a unique location in Papua New Guinea have given scientists rare insights into what tropical coral reefs could look like if human-induced atmospheric CO, concentrations continue to rise unabated.

At present rates of increase, the Intergovernmental Panel on Climate Change (IPCC) forecasts a doubling of atmospheric CO<sub>2</sub> levels by 2100. About a third of the increased load will be absorbed by the oceans. As a consequence, pH levels will drop from 8.1 to 7.8 and the reduced alkalinity (also known as the ocean acidification problem) should make it more difficult for calcifying organisms to build shells and skeletons.



Seascape showing high seeps. Image: Katharina Fabricius.

In 2010-11, AIMS scientist Dr Katharina Fabricius led researchers from six countries to study coral reefs occurring near three natural CO<sub>2</sub> seeps in Milne Bay, Papua New Guinea. This location is the only site presently known where cool CO<sub>2</sub> gas bubbles up in tropical waters.

A scientific paper on the first results of the study was published in the prestigious, international scientific journal, *Nature Climate Change*. It is the first scientific paper to present data on tropical coral reef ecosystems that are naturally adapted and acclimatised to elevated CO<sub>2</sub>.

In the past, scientists have relied on short-term laboratory experiments to tell us what happens to marine organisms exposed to ocean acidification. While these experiments are important, the natural gas seeps in Milne Bay provide a convincing demonstration of what happens to coral reef communities chronically exposed to CO<sub>2</sub> gradients from present day to future conditions.

The research showed there will be some winners but many more losers when tropical coral reefs are exposed to widespread ocean acidification. The researchers found that as pH decreases, the number and types of corals making up coral reefs are much reduced. Diversity of corals drops by 40 per cent and the reef becomes dominated by the massive *Porites* corals referred to in the previous story.

The cover of the more delicate branching corals was reduced three-fold near the CO<sub>2</sub> seeps. Similarly, the abundance of soft corals and sponges were also significantly reduced. Most importantly, the researchers found that reef development ceased below pH level 7.7.

The study showed that significant acidification of the oceans will lead to profound changes in coral reef ecosystems. The demise of the structurally complex corals means that future reefs will be much simpler than current ones with the risk of losing much of the rich biodiversity that we associate with modern coral reefs (see CReefs Highlight).

## Diagnostic tools developed for coral disease detection

Since the occurrence of mass coral bleaching episodes on the Great Barrier Reef, first observed in 1998, the AIMS Long-term Monitoring Team has documented low but significant levels of coral disease that peak following unusually warm summers. While overall disease levels are not yet a matter of concern for the GBR, AIMS' scientists are aware of the much greater role attributed to disease in causing the relatively rapid demise of coral reefs in parts of the Caribbean.

Although disease outbreaks on the GBR are a minor cause of coral cover lost from the whole system, the ironic twist is that their impact is greatest in local areas where coral densities remain high. This effect comes most likely through water-borne chemical signalling among the microbial associates of stressed corals, which include pathogenic bacteria that can respond with explosive growth through their own chemically-mediated process called "quorum sensing".

In 2008, Dr Bryan Wilson was awarded a three-year fellowship from Queensland's Smart State Fund to develop a rapid diagnostic tool for detecting the abundance of pathogenic bacteria causing the most common coral diseases. Given the international interest in this problem (see above reference to Caribbean reefs), this project was co-sponsored by AIMS, the Hawaiian Institute of Marine Biology (HIMB), and other partners.

Based on previous work, *Vibrio corallilyticus* was selected as a model organism. By the end of the Fellowship, two methods have been validated as alternative ways to detect the abundance of this pathogen. As is often the case in research, however, the final stage of building the diagnostic tool for coral disease has shown that the same technology may have equal applicability to the detection of a closely-related bacterial pathogen of shellfish causing commercial losses in the aquaculture industry. This application will also be pursued in future research.



# Terrestrial contaminants shown to have a broad footprint in the sea

Reef Plan is a decadal commitment (2003-2013) by Australian and Queensland Governments to halt and reverse the decline of water quality entering the receiving waters of the Great Barrier Reef.

While the investment in Reef Plan confirms concern about the loads of land-derived pollutants (sediments, nutrients, pesticides) that can be measured at the ends of major rivers draining catchments affected by human activity, there is insufficient knowledge about what happens to the organic (non-sediment) materials after they are discharged to the GBR Lagoon.

The possible routes are wide and complex. The most useful elements will be assimilated quickly into marine food chains and may be (1) recycled, (2) buried in seabed sediments, or (3) released to the atmosphere. The spatial footprints of these processes will depend on physical processes like temperature and those (winds, waves, currents) affecting transport.

The GBR is a complex domain covering 210,000 km<sup>2</sup> where almost every bio-physical variable is confounded. To cover this variability, AIMS has been conducting systematic surveys of regional patterns and processes during different seasonal conditions using its research vessels.

In 2010-11, the WQEH team concluded its study of the southern-central section of the GBR. This is an area where the broadening of the continental shelf produces a wide coastal lagoon but with strong tidal mixing. By following the degradation of organic biomarkers, the study concluded that terrestrial exports were moved offshore quickly with little storage of organic materials in the lagoon or reef sediments.

The importance of flushing in this rapid cross-shelf transport was confirmed by tracking persistent contaminants such as coal dust from a coastal loading facility, which was traced from the coast to the edge of the continental shelf.

# Reef sharks are worth much more alive than dead

Although the exact numbers are debated, the UN acknowledges that the global catch of sharks has increased four-fold over the last 50 years and currently represents many tens of millions of sharks killed every year. Since sharks grow slowly, breed late in life and produce only a few pups at each attempt, their populations are very vulnerable to overfishing and shark numbers almost everywhere are in decline as a result of unsustainable harvesting.

Arguments that sharks should be preserved because they are necessary for the health and performance of marine ecosystems have failed to stop their global demise because of the perceived high value by weight placed on shark fins.



Tagging sharks for research, Palau. Image: Peter Verhoog, Save our Seas Foundation.



In 2010, the international Pew Charitable Trust commissioned a report from AIMS and the University of Western Australia (providing expertise in natural resource economics) to establish the value of shark tourism to the economy of the Pacific Island nation of Palau, which declared the world's first shark sanctuary in 2009.

The analysis quantified the economic benefits of Palau's shark-diving industry and found that it far exceeds the potential return from shark fishing. The average value of a dead shark was estimated as a one-off return of just US\$108. In contrast, the annual value to the tourism industry of the same shark on a tourism dive site was estimated to be US\$179,000 or US\$1.9 million over its life. The difference is a staggering 17,000 multiple of value in favour of conservation.



RV *Solander* in Darwin preparing for research expedition. Image: Jed Garland.

# First full-depth monitoring of the Indonesian Through Flow

The Australian continent sits between the South Pacific and Indian Oceans, and its marine climate is influenced by the major current patterns in these two different ocean basins. As a result, Australia is draped by poleward currents on both sides: the East Australian Current, which forms the western boundary current of the South Pacific subtropical gyre, and the Leeuwin Current, which forms the eastern boundary current of the Indian Ocean subtropical gyre.

The boundary currents impinge on Australia's continental shelf south of Broome in the west and Cooktown in the east. Above these latitudes, the two ocean basins are connected by large flows of warm equatorial surface water that pass from the western Pacific Ocean along the north side of Papua New Guinea, turn south at the western tip of Irian Jaya, flow as swift currents through deep water passages in the Indonesian Archipelago, and turn west into the Indian Ocean to form a strong current along the Indonesian continental margin. This inter-basin exchange is known as the Indonesian Through Flow and it has a major influence on the climate of the Indian Ocean as well moderating the flow of the Leeuwin Current.



In 2010-11, CSIRO oceanographers used the AIMS vessel, RV *Solander*, to deploy moorings in the deep trenches on either side of Timor Leste - in the Timor Passage and the Ombai Strait - which are 'chokepoints' in the global system of ocean currents. These moorings, which are up to three kilometres tall and anchored with four tonnes of weight, cost over a million dollars provided by Australia's Integrated Marine Observing System (IMOS). Carrying an array of oceanographic sensors, these moorings will form part of an international collaboration (the INSTANT project) to monitor interannual variations in the full depth transport of ITF. This is the only location in the global ocean where warm tropical water flows from one ocean basin to another, with a counter balancing flow of cold water at higher latitudes south of the Australian continent. These exchanges have to be well-calibrated to provide accurate models of global ocean circulations.

The largest signal of variation in the ITF is associated with the El Nino Southern Oscillation (ENSO) phenomenon, which also influences the strength of the Leeuwin Current flowing down the coast of Western Australia. To monitor the latter, AIMS' oceanographers in 2010-11 deployed an additional four moorings across the Sahul Shelf to extend the IMOS line from Timor to the coast near the border between WA and the Northern Territory.

La Niña events in the Pacific Ocean result in a stronger Leeuwin Current in the Indian Ocean. The strong La Niña of 2010-11 (responsible for Queensland's summer of extreme weather) also caused a marine heatwave along much of the coastline of Western Australia. In February 2011, sea surface temperatures from Exmouth to Geraldton were 3°C above average for the time of year, while a larger area extending south of Perth and 500km offshore was warmer by more than 2°C. For some locations, 2010-11 produced the hottest water ever recorded. The impact was coral bleaching from the Sahul Shelf to Rottnest Island as well as significant kills of fish and marine invertebrates.

#### AIMS-GA survey remote areas in Australia's North West

In 2008/09, AIMS and Geoscience Australia combined their complementary strengths under an MOU of co-operation to survey deep water habitats within the Ningaloo Marine Park in Western Australia. In 2010-11, the two agencies completed the second of two voyages of discovery to characterise deep water habitats in the Joseph Bonaparte Gulf west of Darwin. The surveys included intensive studies of four areas along a cross-shelf transect on the eastern side of the Sahul Shelf, which is a large drowned segment of the continental shelf that was once dry land dissected on its seaward margins by multiple river valleys that are today submarine canyons. This area is known as the Van Diemen Rise. Behind it are deeper areas that are today submerged sedimentary basins, some full of mud, but that would once have been lakes or flood plains when sea levels were lower in the past.

The survey obtained detailed geological (sedimentological, geochemical, geophysical) and biological data from the submerged banks, channels and plains to establish the late-Quaternary evolution of the region and to investigate modern relationships between the physical environment and ecology for biodiversity prediction over a broader section of the Shelf. At the four locations, the bathymetry was mapped accurately with multibeam sonar data on both visits to follow the stability of sand banks and channels not formed from hard materials. In the basins, sub-bottom acoustic profilers were used to estimate the depth of sediment deposited since the last sea level rise and to reveal the underlying hard structures.

More than 1,154 km<sup>2</sup> of multibeam sonar data and 340 km of sub-bottom profiles were collected. The data showed that the seabed on the Van Dieman Rise is complex with numerous ridges, banks, terraces, channels, and deep holes. This includes a channel on the middle shelf, which is the second deepest known channel on the northern Australian shelf. The banks and ridges are characterised by diverse sponge and soft coral gardens in contrast to the *Halimeda* (a type of calcareous algae) and hard coral constructions found elsewhere on the northern Australian shelf. At the innermost coastal location, significant pockmarks in the soft bottom had acoustic signatures consistent with fluid and gas seepage, as detected elsewhere in the Arafura Sea.



Information and data collected on the survey will be used to support the work programs of the Department of Resources, Energy and Tourism and the Department of Sustainability, Environment, Water, Population and Communities. The new surveys, when combined with existing data, will provide a regional picture of seabed environments in the eastern Joseph Bonaparte Gulf that can be used to support resource development by the oil and gas industry in this highly prospective area as well as characterise proposed marine protected areas.

# Chemical communication confirmed from microbes to corals

The settlement of coral larval is crucial to reef construction. While the origin of larval settlement cues is understood in a broad sense (it comes from chemicals emitted by crustose coralline algae and/or their associated bacteria) the details are unknown.

Just two years after establishing a small team to investigate this problem, including collaborators from the University of New South Wales, the group has identified and purified the first chemical signal from bacteria that induces larval metamorphosis of acroporid coral larvae.

The metamorphic cue was identified as tetrabromopyrrole (TBP) and was produced by just four *Pseudoalteromonas* strains among a culture library of 225 bacterial isolates obtained from the surfaces of crustose coralline algae. The lowest density from one of the strains that induced metamorphosis was just 7,000 cells mm<sup>-2</sup> in assays, which represents just 0.1-1 per cent of the total numbers of bacteria typically found on such surfaces; equivalent to finding "a needle in a haystack".

This break through result was published in the prestigious international journal, *PLOS One* in 2011 but left the team with more work to do. While the potent chemical inducer caused coral larvae to transform into fully developed polyps in hours, only a small proportion of these polyps were successful in attaching to the substratum. As with all good stories, there is more to come.



# National Research Priority Goals



Octocoral specimens collected for CReefs. Image: Jurgen Freund.

AIMS' mission aligns strongly with the National Research Priorities (NRP) and most of the AIMS' budget is dedicated to research to achieve "An Environmentally Sustainable Australia". Through technological innovation and research into matters affecting marine biosecurity, AIMS also contributes to priority goals in "Frontier Technologies for Building and Transforming Australian Industries" and "Safeguarding Australia". Through our ongoing commitment to research excellence, collaboration, and transfer of our research to end-users, AIMS also contributes strongly to the National Innovation Priorities (NIP).

The relative research effort delivered through our research teams is shown in the table on page 28. Details of the Research (NRP) and Innovation (NIP) Priorities are provided in Appendix 2.

National Priority		An Enviro Sustainabl	nmentally le Australi	a	Transforming Australian Industries		Safeguarding Australia		
Priority Goal	A1	A2	A5	A7	۲1	C2	C4	D1	D2
Research Teams (2007-2011)	Research Teams (2007-2011)								
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: This table includes only NRP Goals relevant to the expertise of, and addressed by, AIMS.

#### **Priority Goal**

- 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





# **Examples of delivering to the National Research Priority Outcomes**

#### Contributions to the success of the Reef Water Quality Protection Plan

The GBR Water Quality Protection Plan (Reef Plan) is an initiative of the Australian and Queensland Governments to halt and reverse the decline of water quality in inshore sections of the GBR Marine Park. The two governments have committed \$375 million to support this decadal action (2003-13).

#### Outputs

In 10/11, AIMS completed the sixth year of measuring water quality parameters and coral reef health along the north Queensland coast as its contribution to a multi-institutional Marine Monitoring Program (MMP).

In partnership with CSIRO, AIMS' oceanographers have built and validated the most capable hydrodynamic model yet developed for the Great Barrier Reef.

In collaboration with the IMOS AUV Facility (see Research Highlights), AIMS discovered the total loss of deep water seagrass meadows off Townsville following the extreme summer of floods and cyclone.

#### Outcome 1

The loss of seagrass off Townsville documented after the passage of Cyclone *Yasi* provides the Great Barrier Reef Marine Park Authority with a plausible cause for the sharp increase in stranded dugongs and sea turtles.

#### Outcome 2

Reef Plan is an unprecedented action by governments 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, extreme weather events (above) and climate change.

While the recent run of extreme wet seasons poses a challenge to witnessing a quick improvement in the coastal receiving waters from the on-ground investments in better land management, the new capacity being built in modelling and forecasting provides the best pathway to measure these returns, evaluate alternative management strategies, and guide future decision-making by agencies responsible for our coastal seas.

|--|



#### Baseline surveys for environmental protection of Australia's remote regions

Between Broome and Darwin, the Sahul Shelf is a vast area of continental shelf that has been poorly explored except by the oil and gas industry. The area is Australia's most productive and prospective region for offshore energy extraction and a large proportion of the Shelf has been leased to the energy majors. In 2009, an uncontrolled release from the Montara well lasted 77 days and was the most significant event to date.

#### Outputs

In 2010-11, AIMS surveyed reefs and shoals throughout and beyond a wide area potentially affected by the release of hydrocarbons from the Montara platform with support from PTTEPA.

With support from Woodside Energy Ltd, AIMS concluded a three-year intensive study of the environment around South Scott Reef (an oceanic reef complex south of the Sahul Shelf) commissioned by WEL on behalf of joint venture partners in the Browse Project that will extract natural gas from three reservoirs near the reef.

In collaboration with Geoscience Australia, AIMS completed a two year study of four locations in the eastern Joseph Bonaparte Gulf (see Research Highlights).

#### Outcome 1

The surveys supported by PPTEPA and WEL have provided valuable information to the companies and environmental regulators about biodiversity values. In one case, this was required to provide some assurance about impact following an incident. In the other case, better knowledge of the physical and biological environment will provide both client and regulator with insurance in the future because it enables them to take into account natural variability.

#### Outcome 2

Preserving the legacy of unique bioregions in Australia's northwest marine domain while supporting the sustainable development of energy reserves for the benefit of the nation.

A2	A5	A7	C4
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#### Better knowledge of Australia's past climate

The Australian climate cycles between extremes: floods and cyclones to droughts and bushfires. While this has been our recent experience, instrumental records are limited to the last 100 years and a longer perspective could assist in climate modelling and risk analyses.

#### Outputs

In 2010-11, AIMS found from the analysis of coral cores that the 1973-74 wet season was the wettest summer of the past three centuries although instrument records show that the 2008-09 and 2010-11 seasons come a close second and third.

#### Outcome

AIMS' analysis of long coral cores shows that Queensland's rainfall has become more variable over the last few hundred years, which can be factored into risk calculations going forward. The sectors most likely to benefit from this knowledge are agriculture, water utilities, and local government.




#### Domestication of tropical rock lobsters draws nearer with each discovery

Because it has poleward boundary currents on both sides of the continent, Australia lacks the marine fertility of South Africa and South America; both of which benefit from eastern boundary currents drawing cold, nutrient-rich waters from the Southern Ocean to their continental shelves. Consequently, Australian export fisheries rely upon low volume, high value seafood products. The wild catch of tropical rock lobsters cannot satisfy the demand from growing markets in Asia, so the alternative is aquaculture. The catch is that these animals are very difficult to domesticate in land-based facilities because of their long and complex early history that is normally accomplished in oceanic nurseries far from the coast.

#### Output

In 2010-11, a female ornate rock lobster reared from an egg in the AIMS seawater precinct has spawned a second generation of lobsters (see Research highlights).

This achievement has been based on incremental improvement in crustacean husbandry, animal health, and nutrition. With current rearing techniques, domesticated larvae match the growth and nutritional profile of wild animals collected from the Coral Sea.

#### Outcome

Lobsters are a challenging but highly desirable target for domestication and mass aquaculture. The target is a new, profitable export industry for Australia.

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#### The future of coral reefs glimpsed at natural gas seeps

The concentration of carbon dioxide in the atmosphere has been rising due to the burning of fossil fuels since the industrial revolution. Approximately a third of these increased emissions are being absorbed by the ocean, lowering the pH and alkalinity of marine waters. These changes in ocean chemistry challenge the ability of marine organisms to sequester calcium carbonate from the water and hence impedes their ability to build shells and skeletons. Since coral reefs are one of the grandest expressions of calcification by marine organisms, the gradual acidification of the oceans raises significant concerns for the future of coral reefs.

#### Output

The majority of forecasts about life in a less basic ocean are based upon experiments in aquaria. While these will remain important, AIMS' scientists have made a contribution by leading two expeditions, with researchers from six countries, to three volcanic seep sites in the Milne Bay Province, Papua New Guinea.

The natural setting allowed scientists to compare coral reef communities along pH gradients from ambient to future. The research showed there will be some winners (e.g. seagrasses) but more losers, when tropical coral reefs are exposed to chronic ocean acidification (see Research Highlights).



#### Outcome

The natural circumstances of the cold gas seeps in Papua New Guinea, which mimic future states of chronic exposure to more acidic seawater, should increase confidence in the results of the deluge of experimental results being reported in the peer-reviewed literature about the adverse effect of ocean acidification on marine organisms. The greatest possible outcome would be to influence the international political debate about the need to respond to the threat of human-induced climate change.

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#### **Observing our marine climate in the Tropics**

Ocean variability around Australia has a huge but often under-appreciated influence upon matters of national significance like weather, rainfall, fish production, extreme events, and climate change.

In 2007-08, AIMS began deploying infrastructure along the Great Barrier Reef in the first phase of Australia's Integrated Marine Observing System (http://www.imos.org.au), which is designed to monitor long-term changes in the oceanic drivers of Australian climate and coastal systems.

#### Outputs

By 2010-11, with cash investments from the Australian and Queensland Governments, AIMS had established a sparse but significant network of ocean observations over the Great Barrier Reef south of Cooktown as well as limited assets elsewhere (Darwin, Ningaloo). Although IMOS infrastructure is designed to monitor long-term change arising from oceanic variability, the immediate value of an observing network was confirmed by its performance during Queensland's recent summer of extreme weather (see Research highlights).

In addition to these immediate returns, the IMOS National Reference Station has provided the first continuous record of carbonate saturation state in coastal tropical waters. The seasonal record has shown Aragonite saturation levels during winter that by conventional wisdom should challenge calcification by marine organisms. Clearly, there is more to learn.

#### Outcome

IMOS provides the pathway to unprecedented knowledge of changes in the ocean and the impacts of oceanic variability upon the stability and productivity of regional and local systems. The ultimate goal is a sustainable future and more wealth from the oceans.

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# – 2007-2011 Research Quadrennium – International Review



Scientist conducting biodiversity survey on the GBR. Image: Jurgen Freund.

2010-11 was the last year of the Quadrennium and brought to a close the most recent research planning cycle described in the AIMS Research Plan 2007-11. As before, the quadrennial performance was assessed in the final year by a panel of international reviewers spanning the range of disciplines employed by AIMS' scientists. The 2010-11 reviewers were:

Dr Roger Bradbury (Chair) (marine ecologist, Australian National University) Dr Nancy Knowlton (evolutionary biologist, Smithsonian Institution) Dr Russell Hill (microbiologist, University of Maryland) Professor Hugh Possingham (conservation biologist, University of Queensland) Dr Roger Shaw (soil scientist, consultant) Professor Alexander Tudhope (marine geoscientist, University of Edinburgh)

The review panel was commissioned to review both the quality and impact of science delivered by the Institute's scientists. While the quality of the research was assessed on standard indicators (e.g. publication metrics, awards, funding, etc), the impact of the research was established by delivery of results, including expert advice, to end-users in a manner that allowed uptake and influence into external decision-making processes.

#### "We think that many of the settings — scientific, technical and organisational — are now in place for the Institute to strive uncompromisingly in the next quadrennium to reach international benchmark across most of its areas of operation" AIMS Science Review Panel.

The panel considered the following examples of achievements towards the 12 Key Result Areas in the 2007-11 Research Plan. 1. Assessments of tropical marine biodiversity

- Creefs discovery of new species on coral reefs
- O Voyages of discovery to deeper shelf habitats (Ningaloo Reef, Joseph Bonaparte Gulf)
- Seabed surveys for coastal development near Broome
- O Baseline surveys for benthic primary producers in Scott Reef Lagoon
- O Baseline surveys for deep seagrasses in the GBR Lagoon
- O Biodiversity values of Montgomery Reef and other Kimberley coastal assets



- 2. Accurate and timely information on issues and threats to coral reefs
  - Demonstration of benefits from 'no take' areas in the GBRMP
  - O Broad-scale surveys of reef health for GBR Outlook Report
  - O Effects of seismic noise on corals and reef fish
  - O Impacts of cyclones on the GBR (Larry, Hamish, Yasi)
  - O Impacts of the Shen Neng ship grounding in the southern GBR
  - Impacts of the Montara oil spill on reefs and shoals in NWA
  - Creation of e-Atlas products for the GBR and Ningaloo reefs
  - O Economic valuation of shark resources
- 3. Sustainable tropical aquaculture
  - O Discovery of a new bacterial pathogen
  - O Major improvements in microbial health and biofilm control
  - O Development of a balanced artificial feed for larval lobsters
  - Second-generation animals
  - First commercial sponge farm in the Torres Strait

4. Sustainable supply of bioresources

- O Curation of frozen samples from the GBR Seabed biodiversity collection
- Supply of fractionated extracts to the Queensland Compound Library
- O Creation of the WA Marine Bioresources Library (WAMBL)

5. Human impacts on tropical water quality and ecosystem health

- O Monitoring of inshore water quality to support Reef Plan
- O Development of thresholds for GBR water quality guidelines
- O Provision of expert advice (multiple forums)
- Validation of foraminifera as bioindicators for water quality
- O Impacts of sea-cage aquaculture on receiving environment
- O Effects of dredge plumes on corals and sponges
- Impacts of pesticide exposure on coral metamorphosis

6. Tropical marine ecosystem processes and land-sea interactions

- ATSEA cruise to measure productivity in the Arafura Sea
- O Seasonal studies of biological oceanography along the Kimberley coast
- O Production of complex hydrodynamic models (GBR, Melville Bay, Darwin Harbour)
- O The energetics of mangrove forests (major book synthesis)
- O Impacts of flood plumes on coral and seagrass

7. Marine climate history of northern Australia

- O Evidence of thermal shifts in marine climate for the Pacific and Indian Oceans
- O Climate reconstructions from GBR corals
- 8. Resilience and risk mapping in space and time
  - O Water quality increases risk of coral bleaching
  - O Water column turbulence creates cool refugia for reef corals

- 9. Ecological responses to climate change
  - Discovery of declining calcification by GBR but not WA corals
  - O Impact of ocean acidification on coral reef ecosystems near natural gas seeps
  - Coral bleaching: patterns, processes, causes and consequences (major book review)
  - Major contributions to climate books by GBRMPA and SPC

10. Ocean observing systems to monitor the physical environment

- O Continuous supply of quality data streams from GBR sensors
- O Creation of the world's first wireless sensor networks on coral reefs
- O Development of cost-effective satellite drifters for tracing ocean currents
- O Establishment of IMOS national reference stations in Qld, NT, and WA

11. Understand and predict the responses of reef symbioses to environmental change

- First field-based evidence of symbionts shuffling following coral bleaching
- O First genomic characterisation of microbial communities in sponges
- Role of trace metals in coral bleaching
- O Genomic identification of thermal markers in reef corals
- Selective breeding of corals for thermal tolerance

12. Understand the role of microbes in the functioning of healthy and stressed reefs

- O Isolation and identification of a coral settlement inducer from biofilm bacteria
- The etiology of coral disease by *Vibrio* bacteria
- Role of microbes in DMSP cycles

The panel deemed that the quality and extent of impact of AIMS' science had improved since the previous round of reviews conducted in 2006-7. The panel concluded that the Institute was setting international benchmarks in some areas of research, and that this standard was attainable for most of its research programs in coming years, dependent upon implementing strategic and operational recommendations.

The panel was invited to comment upon the mix of science for the next four-year Research Plan (2011-15) and recommended evolutionary change based upon continuing to invest in the four pillars (marine biodiversity, ecosystem health, climate change, and marine microbiology). The review noted the need to consolidate and strengthen research in the climate space, especially around the broad-scale threats of coral bleaching and ocean acidification.

Their most critical comment was that supply of bioresources and ocean observing were services that could not be assessed through the usual scientific metrics. As a result, the AIMS Bioresources Library will become a repository for novel marine biodiversity collected as a result of exploring new areas rather than one that acquires its own samples. It will be managed outside of the Research Teams along with other major collections (e.g. coral cores). Similarly, all ocean observing for routine monitoring, rather than process understanding, will be administered by the Research Directorate on behalf of all research teams along with other generic infrastructure (laboratories, data services, and seawater facilities).

**Our Performance** 



Based on these recommendations and a review of each Key Result Area, the 2011-2015 Research Plan will be based around the following , slightly-reduced structure.

#### TEAM 1: TROPICAL MARINE BIODIVERSITY (Jamie Oliver (Acting))

- KRA 1: New frontiers in tropical marine biodiversity
- KRA 2: Baseline knowledge and monitoring for management
- KRA 3 Patterns and processes in tropical marine biodiversity
- KRA 4: Tropical aquaculture

#### TEAM 2: WATER QUALITY AND ECOSYSTEM HEALTH (Britta Schaffelke)

- KRA 5: Human impacts on water quality
- KRA 6: Shelf-scale pelagic ecosystem processes

#### TEAM 3: CLIMATE CHANGE AND OCEAN ACIDIFICATION (Ken Anthony)

KRA 7: Australia's tropical seas - past and present

KRA 8: Resilience and vulnerability of coral reefs in a high-CO<sub>2</sub> world

#### TEAM 4: MARINE MICROBES & SYMBIOSES (David Bourne (Acting))

KRA 9: Reef symbioses in a changing ocean KRA 10: Harmful organisms

## **AIMS Data Centre**

Aim: To implement best practice integrated data management which maximises the value of data collected, supports decision making at all levels and actively adds value to the Science outcomes of the Institute.

#### **Overview**

Over the quadrennium, the AIMS Data Centre has taken on additional responsibilities in areas of corporate information systems, data management and information delivery infrastructure.

A data management framework was put in place consisting of a data catalogue, data storage and tools for data collection and data exploration. A range of real time data has been made available on the website through interactive data tools. Visits to this part of the site have grown from 4,000 visitors per month in 2007 to 27,000 visitors per month in 2011.

Data delivery infrastructure was put in place, including:

- Website Content Management System
- O Metadata Repository and delivery of metadata to national metadata repositories
- Online data downloads and subsetting tools
- Online data visualisation
- Online data sharing to allow IMOS to access real time data
- O Spatial data and web mapping infrastructure for sharing data with AODN and e-Atlas
- OBIS data infrastructure was installed and 360,000 data records provided

A number of systems to streamline business processes were created for science reporting and milestone tracking, project funding approval, and capital expenditure approval. A new Intranet provides the internal information delivery infrastructure for corporate information including business processes, and corporate systems.

The team has scaled software development processes to match growth with appropriate software development methodologies with structured build processes, quality assurance and testing, issue tracking and project management.

Externally, the Data Centre has close working links with the eMii facility of IMOS, which is developing the Australian Ocean Data Network site into the major portal for all marine data.



# Science Quality



Mushroom coral with tentacles exposed. Image: Jurgen Freund.

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 fourth and final year of the AIMS Research Plan 2007-2011. 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 these indicators (see Appendix 3, p 117) and demonstrates contributions to the AIMS Outcome which is in agreement with the Australian Government as part of the outcome-output framework (see figure below).





## Science publications, citation analysis, journals per researcher

In 2010 AIMS continued its high publication performance but for the first time in 5 years we have not increased our output in terms of number of publications. This decrease can be explained by three reasons. Firstly, a significant amount of time was dedicated to developing major proposals finalising research programs under the National Environmental Research Program with AIMS playing a major role in the Tropical Ecosystems Hub, Marine Biodiversity Hub and Northern Australia Biodiversity Hub. AIMS is also a major partner in the Western Australian Marine Science Institution which was also undergoing a transition between major funding rounds. Secondly, a significant amount of time was consumed by manuscripts progressing through the full publication process with some papers accepted during the year and being published online but not appearing in print until 2011. Finally, 2010 was a transition year for AIMS@JCU as AIMS and JCU reached agreement on the form in which it would continue (see later) with there being a decrease in student numbers, a trend that will be reversed from 2011. This decrease in publication number will be overturned in 2011 as we have already seen that our publication number in the coming year will be the most productive in our history as we passed the 100 published articles mark by the middle of the year.

Despite this drop in absolute publication number, on a per capita basis this was 3.3 journal articles per research scientist in addition to the publication of book chapters and major reports to clients and stakeholders. By way of comparison this is almost twice that of other science agencies within Australia that track this statistic.



SCImago, is an eminent European research consortium which undertakes global analyses of journal publications using the Scopus® (Elsevier) database of international research literature. SCImago analyses 18,750 journals from all disciplines to determine measures of their quality and influence with one of the key metrics being the SCImago Journal Rank indicator, which measures the scientific influence of scholarly journals accounting for both the number of citations that journal receives from publications in other journals and the importance or prestige of the journals where those citations come from. Using the 2010 calculation of this statistic, over 50 per cent of our publications appeared in the top quartile (or 25 per cent) of journals within the field of agriculture and biological sciences, and over 30 per cent in the field of environmental sciences. When looking at all journals, 84 per cent our publications appeared in journals in the top quartile and 40 per cent in the top centile (or 10 per cent).

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Likewise, using the Thomson Scientific database of scholarly publications over 57 per cent of our publications were in journals which have an 2010 Article Influence<sup>™</sup> score greater than 1 which indicates that each article in the a journal has above-average influence using data from the preceding 5 years of citations.

Like last year, almost 40 per cent of our publications have higher degree students or postdoctoral fellows as the first author. This reflects our ongoing commitment to training of early career researchers and providing them with opportunities to lead research publications.

Our peer-reviewed publications appeared in over 67 different journals across many different scientific disciplines, reflecting our multi- and inter-disciplinary skills base and ability to undertake science on many different scales, from the microscopic to the whole of reef.

AIMS' researchers continue to publish strongly within the fields of core capability and need of our stakeholders and end-users, namely climate change, biodiversity, water quality and marine microbiology (full list in Appendix 4, p 119-138):

The Editorial Board and Editors of Coral Reefs presented the Best Paper Award Coral Reefs Vol 29 (2010) to the article "Three lines of evidence to link outbreaks of the crown-of-thorns seastar *Acanthaster planci* to the release of larval food limitation" authored by Dr Katharina Fabricius and Glenn De'ath of AIMS and Ken Okaji from Coralquest in Japan.

Some of our recent papers continue to have increasing influence within their field. For example:

The article Cooper TF, De'ath AG, Fabricius KE and Lough JM (2008) Declining coral calcification in massive *Porites* in two nearshore regions of the northern Great Barrier Reef. Global Change Biology 14: 529-538 - was one of the 25 most-cited since publication, placing it among the top 3 per cent of articles.

#### Presentations, plenaries and keynote addresses

- Dr Ian Poiner, keynote address "Celebrating the International Year of Biodiversity" AMSA2010, Wollongong 5-8 July and AIMS sponsored the International Keynote Speaker, Prof Chris Langdon "Ocean acidification - how bad is it?" AMSA2010, Wollongong 5-8 July 2010.
- O Dr Dan Alongi attended "Taking the Lead: Payments for Ecosystem Services in Southeast Asia", in Hanoi Vietnam and gave an invited keynote on "Reconciling carbon dynamics and the ecological economics of mangroves".
- Dr Janice Lough invited keynote "How is climate changing for Australia's aquatic environments?" 2010 Conference of Australian Society for Fish Biology & Climate Change Symposium, Melbourne 12-14 July 2010.
- Dr Mark Meekan keynote address "Tagging and tracking the world's largest fish" at ACRS Conference, 10-12 September 2010 Coffs Harbour.
- Dr Chris Battershill keynote address "The role of aquaculture in biodiscovery and production" at the 9th IMBC Qingdao China, 8-12 October 2010.
- Keynote presented by Dr Nicole Webster entitled "Sponge symbionts: Sentinels for marine ecosystem health" at 1st International Symposium on Sponge Microbiology 21 March 2011.
- O Plenary by Dr Janice Lough entitled "Climates of the Past" Greenhouse 2011, Cairns, 11 April 2011.
- Dr Dan Alongi gave keynote talk "Greenhouse Gas fluxes and cycles in wetlands" to the IPCC in Geneva 29 March-2 April 2011
- A number of AIMS' staff presented at the VIIIth World Sponge Conference, 13<sup>th</sup> ISME Conference and was well represented by staff and students at AMSA and ACRS.



#### **Invited lectures**

- Invited oral presentation by Dr Nicole Webster "Deep sequencing reveals exceptional diversity and alternative lifestyles of marine bacterial symbionts" ISME Seattle 22-27 August 2010.
- Invited presentation by Aaron MacNeil entitled "Welcome to the funhouse: global fisheries in a warm and variable climate" at the Adaptation, resilience, vulnerability, and coping with change in social-ecological systems" at Resilience 2011 Tempe, Arizona, USA 12 March 2011.
- Invited presentation by Dr Janice Lough entitled "Observed and projected changes to Pacific surface climate" at the Secretariat of the Pacific Community (SPC) 7th Heads of Fisheries meeting, Noumea, special session on vulnerability of tropical Pacific fisheries and aquaculture to climate change 3 March 2011.
- Invited presentation by Scott Bainbridge entitled "The role of Sensor networks in monitoring and managing coastal systems including ecological monitoring of coral reefs" Annual Conference, Thailand National Science and Technology Development Agency (NSTDA), 24-26th March 2011.
- Invited presentation by Dr Nicole Webster entitled "Marine Microbial Partnerships: Love and other Relationships," University of Vienna March 2011.
- Invited presentation by Dr Mark Meekan at the Biologging Conference, Hobart entitled "Tagging and tracking the world's largest fish" 13 April 2011.
- O Invited presentation by Dr Janice Lough "Coral reef history books" at the Aus2k second regional meeting, Perth April 2011.
- Invited lecture: Drs Fabricius KE, Uthicke S, Langdon C, Lough J and Mr De'ath G, Mr Humphrey C and Mr Noonan S on "The effects of long-term exposure to elevated CO<sub>2</sub> on coral reefs at volcanic CO<sub>2</sub> seeps in Papua New Guinea," Ocean Acidification and Implications for Living Marine Resources in the Southern Hemisphere, Canberra 15-17 June 2011.

### **Awards and prizes**

### **ARC Future Fellowships**

In 2008, the Australian Government created the Future Fellowships scheme to promote research in areas of critical national importance by giving outstanding researchers incentives to conduct their research in Australia. The aim of the scheme is to attract and retain the most talented mid-career researchers.

Future Fellowships are offered at three levels that become increasingly competitive. In 2010-11, just 107 Future Fellowships were awarded to researchers in Tier 1 across all disciplines in the nation (success rate of 32 per cent). In the same year, only 28 Future Fellowships were awarded to researchers in Tier 3 (success rate of 19 per cent).

Two Future Fellows will conduct their proposed research at AIMS over the next four years.

**Dr Madeleine van Oppen** (Tier 3 Fellow) will investigate marine viruses, which are the least studied microorganisms living on the surfaces of corals or in their cells. Her research will characterise the viral associates of corals and determine their roles in coral health, coral bleaching, and adaptation of corals to climate change.

**Dr Michelle Heupel** (Tier 1 Fellow) will investigate the movements of large predatory fishes in coastal and reef environments using acoustic tracking technology. The results on home ranges and seasonal or age-related migrations will test the effectiveness of the current GBR Zoning Plan in protecting these species and also reveal how individuals respond to extreme weather events like floods and cyclones.

#### **Super Science Fellowships**

In 2009, the Australian Government created the Super Science Fellowships scheme as a part of the \$1.1 billion Super Science Initiative to enhance Australian research and innovation in three key areas: space and astronomy; marine and climate; and future industries.



One hundred fellowships were awarded to early-career researchers in two rounds of offer (commencing in 2010 and 2011). In collaborations with other supervisory partners (CSIRO, JCU, UQ, UBC, UWA), AIMS will host six Super Science Fellows. Three Fellows commenced during the reporting year and, in their own words, are:

**Dr Rebecca Albright**: Recently finished her PhD at the Rosenstiel School of Marine and Atmospheric Science, University of Miami, where she investigated the effects of ocean acidification on the sexual reproduction and early life history stages of corals. Rebecca plans to continue this work at AIMS and to document trends in carbonate chemistry and biological processes (e.g., calcification and production) on coral reefs in the central GBR.

**Dr Neal Cantin**: Completed his PhD in 2008 within the AIMS@JCU program. He recently completed a postdoctoral research position with the Woods Hole Oceanographic Institution, Massachusetts, where he applied computed tomography (CT) scanning to quantify coral calcification. In the future, Neal plans to improve our understanding of how corals in the Great Barrier Reef will respond to current and projected rates of environmental change.

**Dr Paulina Kaniewska**: Recently finished her PhD at the University of Queensland. Her past research and broad interests span from understanding molecular and physiological responses of corals to predicted future climate change conditions to exploring circadian rhythms and within colony control of growth patterns in corals. In the future, Paulina plans to investigate the sensitivity of different coral species to future climate change scenarios and to determine mechanisms for tolerance.

Many of the students, supervised by AIMS' scientists, were rewarded with prizes for best oral and poster presentations at conferences, including Australian Coral Reef Society, Australia Marine Sciences Association, VIII World Sponge Conference (Spain) and the 9<sup>th</sup> International Marine Biotechnology Conference (China).

Student authors working at AIMS won three of the five prizes for the 2010 Virginia Chadwick Awards for the Best Student Papers from the ARC Centre of Excellence in Coral Reef Studies:

- Pollock FJ, Morris PJ, Willis BL, Bourne DG (2010) Detection and quantification of the coral pathogen *Vibrio coralliilyticus* by real-time PCR with TaqMan fluorescent probes. Applied and Environmental Microbiology 76: 5282-5286.
- Sato Y, Willis BL, Bourne DG (2010) Successional changes in bacterial communities during the development of black band disease on the reef coral, *Montipora hispida*. The ISME Journal 4: 203-214.
- Bongaerts P, Riginos C, Ridgway T, Sampayo EM, van Oppen MJH, Englebert N, Vermeulen F, Hoegh-Guldberg O (2010) Genetic divergence across habitats in the widespread coral *Seriatopora hystrix* and its associated *Symbiodinium*. PLoS ONE 5: e10871.

### Expert committees, advice, submissions

AIMS provided expert advice to many State, Commonwealth and international Standing Committees or Working Groups in recognition of its expertise in tropical marine environments.

For example, Dr Ian Poiner was the Chair of the Oceans Policy Science Advisory Group (OPSAG) and continued his role as Chair of the International Scientific Steering Committee of the Census of Marine Life, with the Census delivered in London on October 2010. Another example was the expert input by Dr Janice Lough to the University of Oxford "Dangerous Climate Change Assessment Project" (DanCCAP) on climate change and coral reefs; and Dr Mark Meekan was appointed to the Advisory Committee for Save Our Seas Foundation with responsibility for projects in the Indian Ocean and South East Asia (full list at Appendix 7).



# **Adoption by users**

- Dr Janice Lough provided Queensland Department of Environment and Resource Management rainfall/river flow reconstructions from coral luminescence in strategic water planning.
- O Real-time weather stations and web cameras available to external users and the general public.
- O FAIMMS sensor data available; remote sensing data transferred to BOM & early warning for rising sea temperatures.
- AIMS' research, conducted with other research providers in the Marine and Tropical Sciences Research Facility, was successfully transferred to users as it informed the following:
  - GBRMPA Water Quality Guidelines;
  - "Scientific consensus statement on water quality in the Great Barrier Reef" published by ReefPlan;
  - relevant sections of the GBRMPA Outlook Report 2009; and
  - Reef Rescue and Queensland Reef Regulations.
- AIMS continues to embrace web 2.0 initiatives to make its data more readily available to the global community. Part of this approach is make data available using standards and mechanisms targeting discovery by Google, Amazon and Yahoo web 2.0 approaches. AIMS has also made data and content on its web-site available under a Creative Commons by Attribution License. This simplifies the use of AIMS' data by others and supports the Australian Government 2.0 Taskforce initiatives.
- A hydrodynamic model of Darwin Harbour has been used several times to inform industry users of the harbour about the likely effects of future activities.
- The AIMS Metadata System holds hundreds of metadata records available for searching by time and location. AIMS is also a joint venture partner with the Australian Antarctic Division, Bureau of Meteorology, CSIRO Marine and Atmospheric Research, Geosciences Australia and the Department of Defence (RAN Directorate of Oceanography and Meteorology) to form the Australian Ocean Data Centre Joint Facility. This Facility is providing a whole-of-government approach to ocean data management to enable Australia to better manage its ocean data resources.
- IMOS and the Facility for Automated Intelligent Monitoring of Marine Systems, real time sensor data is being made available to the public and the scientific community-at-large.
- The AIMS' satellite receiving station continues to contribute to improved weather forecasting for 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 GBR provide data to numerous external parties through the AIMS web-site using innovative data delivery tools designed by the AIMS Data Centre.
- Data from our automatic weather stations located throughout the GBR are not only accessible to the public-at-large, but an overview of trends and events is provided to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

# Enhancing Relationships: Collaborations to achieve national outcomes

Research and stakeholder partnerships

A major aspect of AIMS' science delivery is to create joint ventures, strategic alliances and significant collaborations to increase the critical mass and diversify the skill base that can be applied to answer complex questions about the sustainable use and protection of marine resources. In 2010-11, the majority of AIMS' scientific tasks received external co-investment, many from partnerships that were also stakeholders in the knowledge that was created. Examples include:

**AIMS@JCU** is a joint venture between AIMS and James Cook University that was created in 2004 to administer a special allocation of funds from the Australian Government to facilitate the sharing of research infrastructure in Townsville and to

provide enhanced opportunities for the training of postgraduate students in tropical marine sciences. When the original tranche of funding expired in 2010, both organisations recognised the value of the closer relationship and have continued to invest cash and scholarships to support the joint training of early career researchers.

Libby Evans-Illidge (AIMS) has replaced Dr Michelle Heupel (JCU) as Research Director of AIMS@JCU, after the latter was awarded a Future Fellowship from the Australian Research Council (ARC) for a proposal to track the movements of large fishes in reef and coastal environments. Michelle has recently joined AIMS' staff but will conduct her research as a joint activity with the University.

Further details at http://aims.jcu.edu.au/AIMS-JCU/home.htm

The **Arafura Timor Research Facility** (ATRF) is a joint venture between AIMS and the Australian National University (ANU) that consists of an office and laboratory complex located in Darwin, adjacent to the campus of Charles Darwin University (CDU). The building was funded by the Australian Government as a Major National Research Facility. It opened in 2006 with a mission to support marine science across northern Australia and other countries bordering the Arafura and Timor Seas.

In 2010-11, as part of the Australian Government's Super Science (Marine and Climate) Initiative, the ATRF was granted funding for additional offices, modern meeting facilities, a research aquarium, and workshop facilities to better support oceanographic research. The refurbished ATRF will become the focus of the **North Australian Marine Research Alliance** (NAMRA), which is a new joint venture between AIMS, ANU, CDU, and the Northern Territory Government (NTG) that will be operational from 2011-12. The inaugural Director of this new program is Professor David Parry (AIMS). NAMRA will support early career researchers (PhD students, post-doctoral Fellows) within a strategic program designed to meet the needs for sustainable development within the region of interest.

Further details at http://www.atrf.org.au/

The **Australian Research Council Centre of Excellence for Coral Reef Studies** was established by the Australian Research Council (ARC) in 2005 creating a partnership among AIMS, ANU, Great Barrier Reef Marine Park Authority (GBRMPA), JCU, and the Universities of Queensland (UQ) and Western Australia (UWA). Following a mid-term review, the Centre was extended to 2013 representing a total investment of almost \$22 million by the ARC in this joint venture. The CEO of AIMS is a member of the Centre's Advisory Board and three of the Institute's senior scientists (Drs Janice Lough, Madeleine van Oppen and Mark Meekan) are Partner Investigators in the Centre. Dr Ken Anthony, formerly a Chief Investigator in the Centre from the University of Queensland, will become a fourth Partner Investigator following his recent appointment to lead AIMS' research into climate change and ocean acidification.

Since its inception, AIMS has co-funded two postdoctoral fellows in the Centre with the current appointees being Dr Jonathon Kool (marine conservation planning) and Dr Sylvain Foret (bioinformatics). AIMS will also provide major sponsorship to the Centre to assist it to host the 12<sup>th</sup> International Coral Reef Symposium in Cairns in 2012. Further details at http://www.coralcoe.org.au/

The **Census of Coral Reefs** (CReefs) was a major project of the 10-year global "Census of Marine Life" funded by the US-based Sloan Foundation; both projects concluded in 2011. CReefs was a partnership with the US National Oceanic and Atmospheric Administration and the Scripps Institution of Oceanography, designed to flesh out the inventory of life forms on coral reefs and to shift the focus of reef health assessments to more than just corals and fish. AIMS' contribution to the global project was to develop and lead CReefs (Australia), which involved 50 scientists from 20 national and international institutions sampling exhaustively the hidden biodiversity of three Australian coral reef sites. Three major expeditions to each of these sites over four years were conducted with sponsorship from BHP Billiton and the Great Barrier Reef Foundation. By the end of the project, this concerted discovery effort had uncovered more than a thousand undescribed species. In addition to numerous publications in



the scientific literature expected to flow for many years, all biodiversity data generated by the project is being made publicly available through the global Ocean Biogeographic Information System (OBIS). The conclusion of the Project was marked by an international workshop at AIMS to plan the extension of similar discovery to coral reefs in developing countries. Further details at http://www.aims.gov.au/creefs/index.html http://www.barrierreef.org/OurProjects/ProjectPartnerships/BHPBillitonCReefs.aspx

2010-11 was a year of transition between national programs of public good environmental science administered by the Commonwealth. The four-year **Commonwealth Environment Research Facilities** (CERF) Program administered by the previous Department of Environment, Water, Heritage and Arts (DEWHA) was concluded with transitional projects designed to add value to completed projects and transfer the benefits to end-users. At the same time, Minister Burke announced a new four-year program to be known as the **National Environmental Research Program** (NERP) to be administered by the new Department of Sustainability, Environment, Water, Populations and Communities, which will sponsor five national research hubs based on collaborative partnerships: NERP Tropical Ecosystems, NERP Marine Biodiversity, NERP North Australia, NERP Environmental Decisions, and NERP Landscapes and Policy. AIMS will deliver part of its research until 2014 through the first three Hubs, which are designed to improve environmental policy by Australian governments. Further details at http://www.environment.gov.au/about/programs/nerp/hubs.html

In 2006, the **Integrated Marine Observing System** (IMOS) was established by the Australian Government with five years of funding from its National Collaborative Research Infrastructure Strategy and matching co-investment from its partners, including AIMS. IMOS is a national system of integrated observations on ocean variability conducted throughout the Australian Marine Jurisdiction that is designed to understand and predict the connections between ocean conditions and climate, and the performance and health of selected marine ecosystems.

In 2007, with additional cash co-investment from the Queensland Government, an IMOS Node was created to monitor the impact of ocean variability upon the Great Barrier Reef. The Great Barrier Reef Ocean Observing System (GBROOS) consisted of IMOS infrastructure between Cooktown and Gladstone that was mostly operated by AIMS on behalf of the marine science community conducting research in Queensland. In 2011, this observing network provided critical information on the summer of extreme floods and cyclones (see Highlights).

In 2008, the early success of IMOS prompted the Australian Government to double its investment and extend the Program for a further two years to 2013. During 2010-11, AIMS led the community consultation to develop a Science and Implementation Plan for the new phase that will see GBROOS metamorphose into a State-wide Node to be known as **Queensland's Integrated Marine Observing System** (Q-IMOS). In addition to sustaining the established infrastructure on the Great Barrier Reef, support from the Commonwealth's Education Investment Fund and a second tranche of co-investment from the Queensland Government will establish new ocean observing facilities in south-east Queensland with a focus on the dense population corridor from Noosa to the Gold Coast, including Moreton Bay. This equipment will be operated by CSIRO.

As Australia's tropical marine research agency, AIMS is also engaged in IMOS activities beyond Queensland particularly through its membership of **Western Australia's Integrated Marine Observing System** (WAIMOS). In 2010-11, AIMS continued to operate National Reference Stations adjacent to Darwin Harbour in the Northern Territory and Ningaloo Reef in Western Australia. In addition to supporting acoustic observatories to track animal movements at Ningaloo and establishing baseline sites in deep water for long-term monitoring by the IMOS Autonomous Underwater Vehicle Facility, AIMS made major contributions to the establishment of an array of oceanographic instruments stretching from the Joseph Bonaparte Gulf, west of Darwin, to the far side of Timor. The purpose of this transect is to monitor variations in the Indonesian Through-flow, which



is the most important exchange of water between the Pacific and Indian Oceans; one with major impacts on climate, fisheries, and ecosystems along the western seaboard of the continent. In part one, AIMS' oceanographers built and deployed four moorings on the continental shelf between the Western Australian coast and the limit of our marine jurisdiction. In part two, AIMS' marine operations supported the extension of this line with the deployment of three deep water moorings built and deployed by CSIRO oceanographers on the two sides of East Timor using the RV *Solander* (see Highlight). Further details at http://www.imos.org.au/

The **Reef Rescue Marine Monitoring Program** (MMP) supports the **Reef Water Quality Protection Plan** (Reef Plan), which is a \$375 million decadal investment (2003-2013) by the Australian and Queensland Governments intended to halt and reverse the decline in water quality entering the Great Barrier Reef Lagoon and, in the long term, to ensure no detrimental impact of this water quality on the health and resilience of the Great Barrier Reef ecosystems. The MMP is coordinated by the GBRMPA as a partnership between AIMS, CSIRO, JCU, the Northern Fisheries Centre of the Queensland Department of Employment, Economic Development and Innovation (DEEDI), and the National Research Centre for Environmental Toxicology (Entox) at UQ.

AIMS' staff regularly monitor the water quality of the receiving waters at 20 fixed sites using the RV *Cape Ferguson*, and small-boat-based diving operations to monitor the health of 32 coastal and inshore coral reefs. Both elements are combined with results from the other partners into the Paddock to Reef Integrated Monitoring and Reporting Program coordinated by the Reef Plan Secretariat within the Queensland Department of Premier and Cabinet. Further details at http://www.gbrmpa.gov.au/corp\_site/info\_services/science\_management/marine\_monitoring\_program

The **Western Australian Marine Science Institution** (WAMSI) is a joint venture among 14 state, federal, industry and tertiary organisations including AIMS (http://www.wamsi.org.au/content/partner-organisations). It was launched by the WA Premier in May 2007 as a program of strategic marine research to underpin the conservation and sustainable management of Western Australia's marine environment with a \$21 million grant from the state and \$80 million of co-investment from the partners.

In 2010-11, AIMS completed the reporting of its research into Ningaloo Reef, which included several highlights. In collaboration with Geoscience Australia, AIMS has mapped 75 per cent of the habitats in the deeper offshore section of the Ningaloo Marine Park discovering many new species of sponges and producing biodiversity maps that will be used to test the effectiveness of the marine park zoning plan to meet its conservation objectives. Through collaboration with the Western Australian Department of Environment and Conservation, AIMS has established long-term monitoring sites within the shallower coral reef section of the Park to measure the replenishment of coral and fish populations. With industry co-investment, a satellite tracking program has been implemented to reveal the migrations of whale sharks, which are seasonal visitors to the Ningaloo Marine Park and the cornerstone of a successful ecotourism industry, to neighbouring countries on the Indian Ocean rim. In addition, oceanographers from AIMS, CSIRO, and the Bureau of Meteorology have collaborated to predict the impact of future climate change upon the Ningaloo Reef ecosystem.

The original WAMSI Partnership Agreement expired in 2011 but the partners indicated their desire for renewal with the release in 2008 of a needs analysis for marine research in the tropical Kimberley Region (*Turning of the tide: science for decisions in the Kimberley-Browse marine region*). The 2011 budget of the WA Government provided initial funding for an extension of WAMSI for a further six years.

Further details at http://www.wamsi.org.au/



# **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 a quarter of our 2009 publications were authored solely by AIMS' staff. Of the remaining collaborative peer-reviewed papers, 38 per cent recognised co-authors at other Australian research organisation while 38 per cent involved international colleagues.

Collaborations are critical not only for our peer-reviewed scholarly publications; just over 40 per cent of our technical reports submitted to clients were also co-authored with collaborators at other organisations.

AIMS had research collaborations with colleagues from 114 organisations in 23 countries. The collaborative research was conducted within 18 countries.



#### **Collaborative scholarly publications 2010**

#### **Visiting Scientist program**

The past year saw a continuation of the successful Visiting Scientist program which enabled AIMS' researchers to work more closely with collaborators and also allow AIMS to improve our capacity and skills for future science needs. Subjects included impacts of ocean acidification; improving the taxonomy of copepods in key coral reef ecosystems and collection of data for database of zooplankton metabolism of the world oceans (see Appendix 7 for full list).

#### **Archival collections**

AIMS is host to several major collections of biological, geological chemical and digital material. These collections have arisen over numerous years of research and AIMS invests in their continued maintenance and extraction of knowledge contained within them. Samples and specimens within these collections may yield new data as time progresses as new analytical methods arise due to technological and methodological developments.

These include one of the largest collections of cores from massive corals with an extraordinary wealth of data about climate and environmental conditions locked within the coral skeletons. These cores are from locations ranging from the southern



Great Barrier Reef across northern Australia to the Houtman-Abrolhos Islands in Western Australia. This geographic spread and the fact that the cores may span several centuries of coral growth provide a window into the environment across much of Australia's tropical oceans. These cores have been consolidated into the Australian Coral Core Archive and will be housed in a new facility in 2012 to ensure it is managed to best practice standards for years to come and make it even more accessible to the scientific community.

At times, collections derived at AIMS may be transferred to collaborating organisations to enable more significant knowledge extraction than can be yielded by AIMS alone. An instance of this was the recent transfer to the Museum of Tropical Queensland of the Charlie Veron Collection of corals.

The *J E N Veron Collection of Corals of the World* was donated by AIMS to the Museum of Tropical Queensland, Townsville on 28 October 2010. It is considered of global scientific significance and represents at least 947 species, supported by up to 15,000 specimens of dried coral, collected worldwide. These corals are referred to in *Corals of the World* (in three volumes), and other publications by J E N Veron, formerly Chief Scientist, AIMS and now an AIMS Associate.

In parallel with the transfer of the collection, the AIMS Data Centre in partnership with Dr Charlie Veron published CoralID on the web providing the final product in the 30+ years of coral taxonomy.

Likewise, a significant number of taxonomic samples collected during the Great Barrier Reef Seabed Biodiversity Project has been transferred to the main campus of the Queensland Museum in Brisbane. The project was a \$9 million collaboration among four research partners (AIMS, CSIRO, Queensland Department of Primary Industries and Fisheries (QDPIF), and the Queensland Museum) to map non-reef habitats and their biodiversity throughout the Marine Park in depths between 10 and 150 metres.

"Exploration and Endeavour: The Royal Society of London and the South Seas" was a collaboration between the National Museum of Australia and the Royal Society. The exhibition was supported by the Australian Academy of Science and AIMS. As part of the 350th anniversary of the Royal Society, this exhibition held at the National Museum from Sept 2010-Jan 2011 brought together unique treasures associated with voyages of scientific discovery to the South Seas. They included navigational instruments from the *Endeavour* and *Resolution*, and letters from James Cook and Matthew Flinders.

### Contributions to Australia's research future through teaching and training

AIMS remains committed to research training to help develop the research and innovation capacity needed to meet the opportunities and challenges facing our marine environment and keep Australia globally competitive. This involves both formal ventures with key partner universities targeting the training of early career researchers and through invitation of AIMS' research staff to be co-supervisors of postgraduate students undertaking research projects in their field of expertise.

AIMS was involved in research projects being conducted by 74 postgraduate students with 28 being accomplished within the AIMS workplace and 46 externally. During 2010, a total of 12 theses were awarded by 9 Australian and 3 overseas universities and to June 2011, 12 students have submitted their theses. There were 15 occupational trainees.





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With respect to joint ventures focussing on early career researchers, in addition to AIMS@JCU (see earlier) AIMS is also a partner in a consortium with CSIRO and the University of Western Australia with the three parties co-funding postdoctoral fellowships and funds to support their research. This particular partnership has resulted in the recruitment of seven fellows from around the world to investigate critical topics for understanding the marine environment along the Western Australian coastline. Likewise, the Northern Australia Marine Research Alliance (see below for details) is focussing on postdoctoral fellowships and PhD scholarships and our relationship with the ARC Centre of Excellence for Coral Reef Studies involves not just provision of several principal investigators but salary support for two postdoctoral fellows. All together, these partnerships allow AIMS to build upon its internal budget commitment of funding towards salaries for at least 10 postdoctoral fellows, a target which has been greatly exceeded in recent years.

As mentioned earlier, our involvement in early career researcher training is reflected in the number of AIMS' staff (24) holding adjunct academic appointments at institutions such as James Cook University, primarily within the ARC Centre of Excellence for Coral Reef Studies, 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.

### Effective use of resources

#### **Milestone completion**

**Our Performance** 

Students working externally supervised by AIMS' staff

Occupational trainees (Australia and overseas)

Key to ensuring we remain on track to deliver on our research to our stakeholders and end-users is a centralised Milestone Reporting System. The nature and timing of milestones are agreed between AIMS and external clients and partners. Close oversight of these milestones provides an early warning of any potential delays ensuring measures such as resource reallocation can be implemented as soon as practicable 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.

Over 91 per cent of our milestones were completed as contracted. Setbacks which could not be mitigated were due to bad weather such as tropical cyclones, infrastructure damage and constraints beyond staff control, and delayed delivery by collaborators and/or suppliers. In all cases, acceptable alternative arrangements were successfully negotiated with the external party.

#### **Continuous improvement projects**

In the interests of making AIMS' data accessible and discoverable, the AIMS Data Centre continues to develop new tools to enable external parties to more easily access and interrogate our data holdings.

This includes delivery of images taken by sophisticated webcams fixed at several locations near AIMS and on the Great Barrier Reef including a unique underwater camera at Davies Reef. Real time observations from Lizard Island, Darwin Harbour, Yongala dive site and Orpheus Island were made available on the website. Data from over 100 sea temperature loggers were

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processed and made available online. Access to the data is made available using an interface that allows discovery of datasets based upon geographic locations, time of collection and various keywords.

Our web-site has also been modernised as it is a key portal into our data holdings and knowledge. This modernisation has included the migration to a web-content management system which allows much faster publication of new information and data on the website.

We continue to be a conduit of data from the Great Barrier Reef and other sectors within Australian tropical oceans to the National Ocean and Atmosphere Administration in the USA, the Australian Integrated Marine Observing System, the Australian Oceanographic Data Network, and the Bureau of Meteorology, with much of the data being incorporated into forecasts and models.

These approaches have also been applied to development of internal systems to make our internal electronic systems more efficient and easier to deliver information to staff to enable them to better carry out their jobs. A new intranet platform was implemented allowing staff to more easily share and find information. The platform allows information from corporate systems to be accessed from a common place. Key business processes can be initiated through the intranet online forms. The intranet provides capability for AIMS to streamline information delivery, business processes and data flows into the future through integration of traditionally disconnected corporate systems.

### **Revenue from co-investment**

Revenue from co-investment is critical to AIMS' financial sustainability and in 2010-11 it represented 31 per cent of AIMS' total revenue. The first chart compares AIMS' external revenue over the past five years. There was a small decrease in external revenue in 2010-11 in comparison with previous years. The second chart shows the breakdown of government and industry funding for the reporting period. The amount of co-investment AIMS received from Australian industry has greatly increased in the past three years 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.





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# Management and Accountability



Lagoon Reef, Far North Queensland. Image: Eric Matson.

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

# **Role and legislation**

AIMS' role is to carry out research and development in marine science and technology and to encourage and facilitate the noncommercial and commercial application of the results arising from such activities. In doing so AIMS operates in accordance with the Public Research Agency Charter signed by the Minister and the AIMS Council in 2008. The Charter has provided guidance to AIMS and its researchers when engaging in public debate on a broad range of topics including climate change and the impact of global change on the marine environment. The Charter can be found at http://www.innovation.gov.au/Science/ SKAandAstronomy/Documents/AIMScharter.pdf

AIMS is a Commonwealth Statutory Authority established by the *Australian Institute of Marine Science Act1972* (AIMS Act). The *Commonwealth Authorities and Companies Act 1997* (CAC Act) sets out reporting, accountability and other rules for AIMS' operations, management and governance. General policies of the Australian Government that applied to AIMS under Section 28 of the CAC Act during the reporting period are: Commonwealth Fraud Control Policy; Australian Government Foreign Exchange Risk Management Guidelines; and Outsourcing of IT Infrastructure Services. In addition, AIMS has complied with the Commonwealth Procurement Guidelines as they apply to AIMS.

AIMS' functions and powers are set out in sections 9 and 10 of the AIMS Act (see Appendix 1, p 113-114).

## **Responsible Minister**

The Minister responsible for AIMS during the reporting period is Senator the Hon Kim Carr, 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.

# **Ministerial directions**

The Minister provided the AIMS Council with a Statement of Expectations on 23 February 2010. This Statement outlines the Government's expectations on AIMS' research and innovation priorities, strategic direction, research excellence, governance and communication. The Minister expects AIMS to play an active role in implementing Australia's innovation agenda. The Council responded with a Statement of Intent.

No new Ministerial directions were received during the reporting period.



# Location of major activities and facilities



# **Corporate Governance**



AIMS Council - Dr Ian Poiner, Prof Sandra Harding, Mr Wayne Osborn, Mr Nicholas Mathiou, Ms Elizabeth Montano, Dr Brian Fisher and Mr John Grace. Image: John de Rooy.

## **Role of Council**

AIMS Council sets the Institute's key objectives and research strategies. The Minister and the Department are advised on a continuous basis by the Institute of progress against the four-year Research Plan. 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;
- O 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 the reporting period, all of the abovementioned CAC Act requirements were met.



## **Council members biographies**

#### **Mr Wayne Osborn**

#### Term as Chairman: 1 January 2010 – 31 December 2014

Wayne Osborn has over 35 years experience in the resources industry. He joined Alcoa of Australia Ltd in 1979 and retired in February 2008, after serving as managing director since 2001. Wayne started his career in telecommunications and moved to the iron ore industry in the mid 1970s. Wayne has been a director of Thiess Pty Ltd since 2005 and was appointed as Chairman in 2008. He was appointed to the board of Leighton Holdings Ltd in 2008 and to the boards of Wesfarmers Ltd and Iluka Resources Ltd in 2010. Wayne has an interest in whale conservation and wildlife photography. He was elected an International Fellow of the New York-based Explorers club in 2004.

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

#### Term as Council Member: 16 December 2004 – 15 December 2014

Mr. Grace has worked for 40 years in industry, primarily biotechnology, 20 years of which he was a CEO. His particular skill is dealing with the complexities of commercialisation of research particularly from the public sector. 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 iBIO Pty Ltd which offers services in research planning and commercialisation. He is Chair of ITEK Pty Ltd the commercial arm of the University of South Australia; in addition he is Chair of Trans Tasman Fund Manager Pty Ltd, a director Trans Tasman Commercialisation Fund and a Vice President of the Academy of Technological Sciences and Engineering. Formerly he has been a director of a number of private companies and served on a number of Federal and State government boards/committees. Some of which are: AMRAD Corporation Ltd, CRC for Cellular Growth Factors, Chair Victorian Science Agenda investment fund, the Australian Research Council, the Victorian Premier's Knowledge Innovation Science and Engineering Task Force; the Industry Research and Development Board and President/Director of the Australian Biotechnology Association.

#### Ms Elizabeth Montano BA, LLB, FAICD

#### Term as Council Member: 16 December 2004 – 15 December 2014

Ms Montano has worked in senior positions in both the private and public sectors for over 25 years and is a member of the AIMS Audit Committee. She was a senior solicitor and banking and finance consultant with Mallesons Stephen Jaques and is currently a Commissioner of the Australian Fisheries Management Authority and a Member of its audit and risk committee. She also runs an advisory business advising government and the not for profit sectors on corporate strategy, governance, risk and audit. She is the independent Chair of the Audit Committee of the Department of Sustainability, Environment, Water, Population and Communities, and an independent member of the audit committees of The Australian Customs and Border Protection Service and the Department of Veterans' Affairs. She has held various non-executive positions in a wide variety of organisations, examples include 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. She is a former CEO of AUSTRAC, Australia's anti-money laundering regulator and financial intelligence unit and a regulatory policy Branch Head at the Australian Securities Commission (ASIC's predecessor).

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

#### Term as Council Member: 1 September 2005 – 31 August 2013

Mr Mathiou has over 20 years of professional investment, transaction and corporate advisory experience with particular emphasis on private equity investment in emerging enterprises and is currently Chair of the AIMS Audit Committee. He is the Director of Griffith Enterprise, the commercialisation office of Griffith University, and is responsible for its overall strategic direction and management. He has significant experience in the establishment of new ventures, technology transfer, and commercial practices. He is a fellow of the Financial Services Institute of Australasia, a barrister of the Supreme Court of



Queensland, a barrister and solicitor of the Supreme Court of Victoria, a member of Chartered Secretaries Australia and an associate member of the Australian Society of Certified Practising Accountants (ASA). In executive roles for multinational 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.

#### Professor Sandra Harding B Sc (Hons), M Pub Admin, PhD, Hon Doc, FAICD, FAIM

#### Term as Council Member: 26 September 2007 – 25 September 2015

Professor Sandra Harding is Vice-Chancellor and President of James Cook University. In this position, she is responsible for the overall leadership and management of the University across all operating sites, including campuses in Townsville, Cairns and Singapore. Her scholarly interests reside around the sociology of work, industry and organisation and she has a keen professional interest in education policy and management. Professor Harding has undertaken a wide variety of external roles within the higher education sector and the business community. She has also served on a number of review panels and accreditation committees within the higher education sector. Her current board commitments include: the Australian Institute of Marine Science, the Queensland Premier's Smart State Council, Skills Queensland, North Queensland Toyota Cowboys, Townsville Enterprise Limited and Advance Cairns. She is a Deputy Chair of Australian universities' peak body, Universities Australia, a member of the Ministerial Advisory Council on Regional Australia and Australia's representative on the University Grants Commission for the University of the South Pacific.

#### Dr Brian Fisher AO, PSM, BScAgr (Hons), PhD, DScAgr, FASSA

#### Term as Council Member: 26 September 2007 – 25 September 2015

Brian is currently Managing Director of BAEconomics Pty Ltd, having previously held the position of Executive Director of the Australian Bureau of Agricultural and Resource Economics (ABARE). Following his retirement from ABARE Brian was Vice-President at CRA International and then CEO of Concept Economics. Prior to 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.

Brian has been the government board member on a number of statutory corporations and is currently a member of the Council of the Australian Institute of Marine Science. Brian has published over 260 papers and monographs. In addition to his position with ABARE in 2003 and 2004 he was an Associate Commissioner of the Productivity Commission and in 2005 the Chairman of the Prime Minister's Exports and Infrastructure Taskforce. In 1994 Brian received the Farrer Memorial Medal, 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 and a DScAgr (Honoris Causa) from the same university.

#### Dr Ian Poiner BSc (Hon), PhD, FTSE

#### Term as Council Member: 12 July, 2004 – 12 October, 2011

Dr lan 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 GBR, 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.

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# **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.

### **Council attendance**

	23 Aug 10 Teleconference	7-8 Sep 10 Perth	22-23 Nov 10 Townsville	21 Mar 11 Townsville	14 Jun 11 Townsville
Mr Wayne Osborn	~	~	~	✓	✓
Mr John Grace	~	~	~	~	✓
Ms Elizabeth Montano	✓	~	~	~	✓
Mr Nicholas Mathiou	~	~	~	~	✓
Prof Sandra Harding	~	~	~	~	✓
Dr Brian Fisher	✓	~	~	~	✓
Dr Ian 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) and Ms Elizabeth Montano. Roy Peterson resigned as a Member due to a potential conflict of interest in relation to AIMS' internal auditors. He was replaced by Carolyn Eagle in August 2010. Ms Eagle resigned as a member on 17 February 2011 to avoid a conflict of interest due to the then impending tenders for internal audit services in relation to AIMS. The Chief Executive Officer, the Chief Finance Officer, and 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	Number of meetings eligible to attend
Mr Nicholas Mathiou (Council Member and Chairman)	4	4	4
Ms Elizabeth Montano (Council Member)	4	4	4
Ms Carolyn Eagle (External Member)	4	1	2

# 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.

### **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.

## **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 2010-11 fraud data to the Australian Institute of Criminology. The Fraud Control will be reviewed again in June 2012.

### **Financial reporting**

AIMS' financial statements are prepared in accordance with:

- Finance Minister's Orders for the reporting period ended 30 June 2011; 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 2011.

### **Internal audit**

The Audit Committee approves the annual internal audit plan and receives regular reports on progress against the plan. The internal audit function was 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.

### **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 four banks In accordance with AIMS' policy on investments. The maximum amount that can be invested with any one bank is 50 per cent of total investments.

### 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.

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**Our Organisation** 



# **Consultancy services**

The Institute did not seek any consultancy advice during the 2010-11 period.

# **EEO and workplace diversity**

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.

AIMS has in place a full range of policies and procedures designed to ensure that workplace diversity and equality of opportunity are fundamental operating principles of the Institute and its staff. These systems include:

- 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 amenities for people with disabilities;
- O Construction of facilities such as the Centre for Marine Microbiology and Genetics Research support equity of access;
- O 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.

### **Staff consultation**

Staff consultation and communication took place via a range of mediums such as all-staff meetings, emails and newsletters. The Joint Consultative Committee met five times in 2010-11. This committee provides a forum for discussion and consultation between management and staff representatives.

### **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.



# Public Accountability



AIMS Scientists deploying the Sea Glider in the Coral Sea, from the RV Cape Ferguson's tender. Image: Daniel Wisdom.

# Judicial decisions and reviews by outside bodies

No judicial decisions relating to AIMS were handed down during the reporting period.

# **Ombudsman**

No issues relating to AIMS were referred to the Commonwealth Ombudsman during the reporting period.

## **Industrial relations**

No significant industrial issues arose during the reporting period. The AIMS Enterprise Agreement 2010 – 2012 which came into effect on 13 May 2010 was successfully implemented during the reporting period. A new Human Resource Information System (HRIS) from Technology One, with the main focus on Payroll was successfully rolled out during 2010/11. Technology One is also used in AIMS Financial Services and Supply & Logistics Sections.

# **Freedom of Information**

#### **FOI Requests**

No requests were received in 2010–11 under the provisions of the *Freedom of Information Act 1982* (**FOI Act**). No applications for internal review of decisions made under the FOI Act were received during 2010-11. No applications to the Administrative Appeals Tribunal for external review of decisions made under the FOI Act were received during 2010-11. No applications to amend records under the FOI Act were received during 2010-11. The statement required under section 8 of the FOI Act, setting out documents available for inspection and the other information listed in that section, is at Appendix 6.

### **FOI Operations**

The documents listed in Appendix 6 are generally freely available to any person requesting them. The availability of other information is subject to assessment which will be made on a case-by-case basis. The grounds for assessment include commercial confidentiality; legal professional privilege and personal privacy (refer to the FOI Act for details of these and other grounds for refusal under the current legislation). Requests for any such information must be made in writing to the relevant person and be accompanied by the appropriate application fee (if any).



Freedom of Information Officer c/- Senior Commercial Lawyer Commercial Services Group Australian Institute of Marine Science PMB No 3, Townsville Mail Centre MC Qld 4810 Telephone: (07) 4753 4146 Facsimile: (07) 4772 5852

### **Risk assessment**

**Our Organisation** 

AIMS has a comprehensive corporate risk management strategy in place. This includes processes to identify and assess new risks along with the refinement of existing control measures.

# **Health and safety**

#### Health and safety management arrangements (HSMA)

AIMS is committed to the health and safety of its staff and visitors and recognises the importance of reviewing procedures aimed at improving staff health and safety. AIMS acknowledges its responsibilities under Section 74 of the *Occupational Health and Safety Act 1991*.

AIMS places a strong focus on communication and empowerment, safety briefings, proactive hazard identification and incident reporting all of which have improved the safety culture where all are authorised to stop any work where effective risk management controls are not in place and play an active role in continuous improvement. Personnel routinely question work methods (prior to or during operations), reassess hazards and implement additional and improved control measures.

A focus has also included the enhancement of the AIMS Field Work Procedures providing a clear framework by which AIMS manages health and safety while in the field articulating associated standards, emergency response preparedness, roles, responsibilities and accountabilities.

The HSMA empowers the AIMS' Safety Committee which plays an active role in health, safety and continuous improvement. The committee meets every two months and comprises six elected health and safety representatives, an Health, Safety and Environment (HSE) Advisor and HSE Coordinator, management delegates and field safety, emergency response and laboratory safety advisors. The HSMA also provides for management's commitments and provides a formal process for addressing issues and dispute resolution.

### Health and safety outcomes

The Institute undertakes 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 2010–11, the safety culture and function within the Institute were strengthened in many ways including:

- Implementation of new field work procedures providing a greater level of safety with particular attention on emergency response, fitness for work and risk management;
- HSE assessment of a remote area scientific research stations used by AIMS' scientists with particular attention on emergency response;

- Procurement of personal man-overboard locating devices;
- Successful completion of the Scott Reef Research Project with continuous improvement of the AIMS HSE Management Systems;
- O Review of the waste management and reduction strategies including the safe removal and disposal of chemicals;
- Provision of the following training:-
  - Radiation Safety Officer;
  - Chemical database upgrade and training (Chemwatch);
  - Chief Emergency Warden;
  - Health & safety representative training;
  - Medical first aid on ships training;
  - Elements of shipboard safety training;
  - Emergency medical technician certification;
  - First aid and advanced resuscitation training;
  - Rescue diver training;
  - ADAS commercial diving accreditation; and
  - Basic slinging (load shifting).
- O Ongoing safety audits and inspections with continuous review of HSE policies and procedures;
- Participating in workshops and forums with Australian Maritime Safety Authority, National Marine Safety Committee, National Offshore Petroleum Safety Authority, Comcare and Workplace Health & Safety Queensland with respect to proposed changes and harmonisation of safety legislation;
- Workplace harassment officers and health & safety representatives designated to assist staff and the Institute in promoting and maintaining a safe and healthy workplace; and
- O Ongoing confidential Employee Assistance Counselling Program.

### Incidents and hazard reporting

AIMS has actively encouraged the identification and reporting of potential safety hazards and incidents and during 2010-11 a total of 111 were formally reported, the majority of which did not involve injuries. Appropriate preventative actions were implemented demonstrating a commitment to reduce the frequency of high potential incidents and injuries by proactively identifying and reporting hazards with the objective to continuously improve safety at AIMS.

### Investigations, including Comcare-related issues

During the reporting period two incidents were notified to Comcare under the requirements of Section 68 of the *Occupational Health and Safety Act 1991* in relation to dangerous occurrences. The incidents included a scientific visitor sustaining broken toes after slipping on the back deck of a chartered vessel and an AIMS employee suffering a medical condition potentially requiring a remote area evacuation. Additionally there were no workers' compensation claims under the Comcare Workers' Compensation Scheme.

**Our Organisation** 



### **Environmental performance**

#### Contribution to environment protection and biodiversity conservation

In its 30-plus year history AIMS has demonstrated an extensive commitment to environmental protection and biodiversity conservation. We have worked with industry, government, the community and other scientific institutions and agencies on programs and projects dedicated to conserving and sustainably managing tropical marine resources. As a community leader in tropical Australia and a Commonwealth statutory authority, AIMS has an obligation, both statutorily through the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and morally, to protect and maintain biodiversity and heritage within its control.

#### Contribution to ecologically sustainable development

AIMS contributes to Ecologically Sustainable Development (ESD) through its research activities and operations. For example, research activities within our Tropical Aquaculture Section will help remove pressure on marine resources such as lobsters, which are currently harvested from the wild.

As we hold the current Chair and Secretariat of the Oceans Policy Science Advisory Group, AIMS is playing a critical role in advising the Federal Government on the best ways forward for the management of Australia's marine environment.

We have researchers who provide critical science to Australian, state and territory governments on issues such as water quality, providing a framework for the management of agriculture and urban run-off to help protect nationally significant industries such as reef tourism. In times of potential national environmental disasters such as the Montara (West Atlas) oil spill or the grounding of the Shen Neng 1 we have assets such as our vessels and teams of staff who are able to provide emergency advice and assessment in order to mitigate the impacts of these accidents.

#### The effects of AIMS' actions on the environment

AIMS' operations consume energy, water and material resources during the pursuit of its research outcomes. The green@AIMS program, which commenced in 2008, continues to deliver energy efficiencies for the Institute. The Energy Monitoring System commissioned in June 2010 has been used to establish consumption base lines and trends, which allows targeted energy reduction programs and initiatives.

Construction of an off-peak chilled water plant, a component of the Tropical Marine Research Facilities Project, has commenced. The project includes installation of air conditioning chillers that are 40 per cent more efficient than those used currently, as well as moving electrical demand for air conditioning into off-peak periods. This initiative has been developed in association with Ergon Energy's Townsville Commercial Demand Management Pilot Project, which consists of a number of individual commercial projects around Townsville that aim to reduce demand on the network and, at the same time, reduce greenhouse gas emissions. As part of this project Ergon is installing a 50kW solar system that will produce approximately 92MW of clean energy per annum.

As well as focusing on step change improvements in electricity consumption, AIMS continues to promote energy efficiency amongst the workforce. Low energy lights and other efficiency measures are being trialled in various locations within the Institute. Our total electricity consumption has reduced from 7.436 GW in 2009-10 to 6.982 GW for 2010-11.

AIMS operates a well-established car pooling program whereby our staff are provided with access to shared vehicles. Approximately 91 per cent of all staff, visitors and students travel to and from AIMS each day in a commuter vehicle. The vehicles AIMS selects for the commuter fleet must achieve a Green Vehicle Guide rating of 10.5 or higher. It is estimated that the commuter program reduces the number of vehicles travelling to and from AIMS each day by between 80 and 100. Furthermore, fuel consumed by the commuter fleet is included in AIMS' carbon reporting under the Australian Government Energy Efficiency in Government Operations Policy. Reporting CO<sub>2</sub> emissions generated by employee travel to and from the workplace is considered leading practice.

### Water usage

All sewage generated at the Townsville headquarters are treated in an on-site wastewater recycling facility. Recycled wastewater is for irrigating the lawns and gardens. A water-wise initiative introduced this year was the installation of motion-sensored urinal systems to control the frequency and volume of water used. Our total annual water consumption for 2010-11 was 20.9 ML - a reduction on last year's consumption of 22.5 ML.

## Recycling

AIMS aligns itself with the Australian Packaging Covenant (APC) Action Plan of 2007 and reported on waste statistics this year to APC (DEWHA) using the Australian Government National Packaging Covenant Waste Audit Tool. This evaluation highlighted improvement areas for AIMS waste and recycling systems relating to paper, cardboard, batteries, printer cartridges, lubricants and metals.

### **Energy usage**

In 2009/10 AIMS used 58.96 TJ terajoules and this year we estimate this figure will be 59 TJ, primarily because, this year, our vessels used 20,000 more litres of diesel. This increase in diesel usage is primarily due to the operations of the RV *Solander* - a combination of more 24-hour work to use the full capacity of this asset, plus the long steaming distances between remote locations in the north west.

# **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 sandards.

# **Gene technology**

One new proposal for a Genetically Modified Organism (GMO) dealing was assessed as 'exempt' by the Institute's Biosafety Committee in 2010-11 and, on 31 October 2010, the Office of the Gene Technology Regulator (OGTR) granted AIMS a licence to proceed with a 'Dealing Not Involving Release'. With projects on-going from previous years, AIMS now has one licenced GMO project, 7 GMO projects that are defined by the OGTR as NLRDs (Notifiable Low Risk Dealing), and 14 defined as 'exempt'.

# Our staff

### **Staffing and structure**

The total number of staff employed by the Institute at 30 June 2011 was 211 (by head count). When taking into account hours worked over the reporting period, the full-time equivalent value is 205.33. 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.

Staff numbers in 2010-11 have declined marginally as external contract work such as the Scott Reef Research Project has concluded. Meanwhile additional staff have been recruited for the Response to Climate Change team.

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Our Organisation

Staff numbers and EEO status by head count as at 30 June 2011	l (prior yea	ar figures have	been bracketed):
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	Female	Male	Total
Research Scientists	(14) 16	(29) 27	(43) 43
Research Projects	(31) 24	(49) 50	(80) 74
Other (Research and Corporate Services)	(38) 36	(54) 58	(92) 94
Total Staff	(83) 76	(132) 135	(215) 211

Aboriginal and Torres Strait Islander	( 0.5%)	0.5%
Non English speaking Background	(10.7%)	13.7%
Staff with Disability	(1.9%)	2.37%
Women	(38.6%)	36.02%

#### Organisational structure of the Australian Institute of Marine Science




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.

#### **Code of 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. 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.

#### 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 2010-11 the Institute had no formal reported cases 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.

#### **Employee Assistance Program**

PPC Worldwide is contracted by the Institute to provide an independent Employee Assistance Program (EAP). The EAP is free to staff /family members and authorised visitors for up to 10 visits and provides assistance in the following areas:

- O Relationship and family problems;
- Maximizing personal potential/performance;
- Anxiety, depression and stress;
- Changes at work or home;
- Financial and legal concerns;
- Alcohol and/or drug abuse;
- Gambling problems;
- Coping skills to handle a difficult set of circumstances (grief, serious illness, difficult personality, wayward child or children);
- Work/Life balance issues;
- Conflict at work/home/elsewhere; and
- Coping skills in dealing with a range of pressures.



Staff/family members and authorised visitors can self refer or be encouraged by a colleague, supervisor Human Resource or OH & S staff to access the program. Approximately 3.32 per cent of staff accessed the counselling service during the reporting period, a decrease on the previous year (9.52 per cent). A further dissection of usage reveals that 7 staff accessed the service with primary issues split between personal (86 per cent) and work (14 per cent).

It is difficult to assess why there was a decrease in utilisation for the period. Of note is that no family members or visitors accessed the Program. Awareness of the program may have declined or there may not have been the need to access the Program given more stable economic conditions. There were no trauma responses in the reporting period.

# **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. Both the charter and details about how to provide feedback may be found at http://www.aims.gov.au/docs/about/corporate/service-charter.html

# Part Three: Financial Statements

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#### INDEPENDENT AUDITOR'S REPORT

#### To the Minister for Innovation, Industry, Science and Research

I have audited the accompanying financial statements of the Australian Institute of Marine Science for the year ended 30 June 2011, which comprise: a Statement by the Directors, Chief Executive Officer and Chief Financial Officer; the Statement of Comprehensive Income; Balance Sheet; Statement of Changes in Equity; Cash Flow Statement; Schedule of Commitments; Schedule of Contingencies; Schedule of Asset Additions; and Notes comprising a Summary of Significant Accounting Policies and other explanatory information.

#### Directors' Responsibility for the Financial Statements

The directors of the Australian Institute of Marine Science are responsible for the preparation of the financial statements that give a true and fair view in accordance with the Finance Minister's Orders made under the *Commonwealth Authorities and Companies Act 1997*, including the Australian Accounting Standards, and for such internal control as the directors determine is necessary to enable the preparation of the financial statements that are free from material misstatement, whether due to fraud or error.

#### Auditor's Responsibility

My responsibility is to express an opinion on the financial statements based on my audit. I have 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 about 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. In making those risk assessments, the auditor considers internal control relevant to the Authority's preparation of the financial statements that give a true and fair view 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 Authority's internal control. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of accounting estimates made by the directors, as well as evaluating the overall presentation of the financial statements.

> GPO 80x 707 CANBERRA ACT 2601 19 National Circuit BARTON ACT 2600 Phone (02) 6203 7300 Fax (02) 6203 7777

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

#### Independence

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

#### 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 2011 and of its financial performance and cash flows for the year then ended.

Australian National Audit Office

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Linda Gorrell Senior Director Delegate of the Auditor-General Canberra 23 August 2011



# STATEMENT BY THE DIRECTORS, CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER

In our opinion, the attached Financial Statements for the year ended 30 June 2011 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*, as amended.

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

Signed

Mr Wayne Osborn Chairman of Council 23 August 2011

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Dr lan Poiner Chief Executive Officer 23 August 2011

Signed

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Mr Victor Bayer Chief Finance Officer 23 August 2011

#### STATEMENT OF COMPREHENSIVE INCOME

for the period ended 30 June 2011

		2011	2010
	Notes	\$'000	\$'000
EXPENSES			
Employee benefits	<u>3A</u>	21,680	20,115
Supplier expenses	<u>3B</u>	18,851	17,668
Depreciation and amortisation	<u>3C</u>	7,725	7,831
Write-down and impairment of assets	<u>3D</u>	-	33
Foreign exchange losses		10	4
Finance costs		7	18
Losses from asset sales	<u>3E</u>	115	93
Total expenses	=	48,388	45,762
LESS:			
OWN-SOURCE INCOME			
Own-source revenue			
Sale of goods and rendering of services	<u>4A</u>	15,898	17,675
Interest	<u>4B</u>	4,061	1,703
Other	<u>4C</u>	376	182
Total own-source revenue	=	20,335	19,560
Gains			
Sale of assets	<u>4D</u>	41	171
Total gains		41	171
Total own-source income	=	20,376	19,731
Net cost of services	=	28,012	26,031
Revenue from Government	4E	30,883	30.413
Total Revenue from Government	— <b>-</b>	30,883	30.413
Surplus	-	2,871	4,382
OTHER COMPREHENSIVE INCOME	=		
Changes in asset revoluction reserves		3 007	201
Total other comprehensive income	-	3,007	201
rotarother comprehensive income	-	3,007	301
Total comprehensive income	_	5,878	4,683

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





### BALANCE SHEET

as at 30 June 2011

	Notes	2011 \$'000	2010 \$'000
ASSETS			
Financial Assets			
Cash and cash equivalents	<u>5A</u>	423	572
Trade and other receivables	<u>5B</u>	9,387	7,083
Other investments	<u>5C</u>	77,088	42,076
Total financial assets	=	86,898	49,731
Non-Financial Assets			
Buildings and leasehold improvements	6A,C	57,015	53,785
Infrastructure, plant and equipment	6B,C	38,225	36,953
Intangibles	6D,E	1,686	966
Inventories	<u>6F</u>	194	211
Other	<u>6G</u>	309	345
Total non-financial assets	_	97,429	92,260
	_		
Total assets	=	184,327	141,991
LIABILITIES			
Payables			
Suppliers	<u>7A</u>	(2,016)	(1,851)
Other	<u>7B</u>	(2,901)	(3,592)
Total payables	-	(4,917)	(5,443)
Non-interest bearing liabilities			
Loans	<u>8A</u>	(1,500)	(1,500)
Total non- interest bearing liabilities	-	(1,500)	(1,500)
Provisions			
Employee provisions	<u>9A</u>	(7,336)	(6,352)
Total provisions	_	(7,336)	(6,352)
Total liabilities	-	(13.753)	(13 295)
	-	170 574	128 606
Net assets	=	1/0,0/4	128,090
EQUITY			
Contributed equity		85,607	49,607
Reserves		54,686	51,679
Retained surplus		30,281	27,410
Total equity	-	170,574	128,696

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

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			Asset reval	uation	Contribut	ed		
	Retained earni	sgn	reserv	je	equity/cap	ital	Total eq	uity
	2011	2010	2011	2010	2011	2010	2011	2010
	\$,000	\$'000	\$`000	\$`000	\$1000	\$`000	\$2000	\$,000
Opening balance								
Balance carried forward from previous period	27,410	23,028	51,679	51,378	49,607	31,607	128,696	106,013
Adjusted opening balance	27,410	23,028	51,679	51,378	49,607	31,607	128,696	106,013
Comprehensive income								
Other comprehensive income		I	3,007	301	,	•	3,007	301
Surplus for the period	2,871	4,382	•	I	ı	•	2,871	4,382
Total comprehensive income	2,871	4,382	3,007	301	I		5,878	4,683
Transactions with owners								
Equity injection		ı		ı	36,000	18,000	36,000	18,000
Sub-total transactions with owners			•	ı	36,000	18,000	36,000	18,000
Closing balance as at 30 June	30,281	27,410	54,686	51,679	85,607	49,607	170,574	128,696

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

STATEMENT OF CHANGES IN EQUITY

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Financial Statements



#### CASH FLOW STATEMENT

for the period ended 30 June 2011

	Notes	2011 \$'000	2010 \$'000
OPERATING ACTIVITIES			
Cash received			
Sales of goods and rendering of services		16.612	22,588
Receipts from Government		30,883	30,413
Interest		3,628	1,161
Net GST received		-	76
Other		376	182
Total cash received	_	51,499	54,420
Cash used			
Employees		(20,664)	(19,371)
Suppliers	_	(18,958)	(17,766)
Total cash used	_	(39,622)	(37,137)
Net cash from operating activities	10	11,877	17,283
INVESTING ACTIVITIES			
Cash received			
Proceeds from sales of property, plant and equipment		67	660
Total cash received	_	67	660
Cash used			
Purchase of property, plant and equipment	_	(10,081)	(10,046)
Total cash used		(10,081)	(10,046)
Net cash used by investing activities	-	(10,014)	(9,386)
FINANCING ACTIVITIES			
Cash received			
Contributed equity	_	33,000	18,000
Total cash received	_	33,000	18,000
Net cash from financing activities	-	33,000	18,000
Net increase in cash held	_	34,863	25,897
Cash and cash equivalents at the beginning of the reporting period	=	42,648	16,751
Cash and cash equivalents at the end of the reporting period	5A,C	77,511	42,648

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



#### SCHEDULE OF COMMITMENTS

as at 30 June 2011

	2011	2010
BY TYPE	\$'000	\$'000
Commitments receivable		
Buildings	1,100	40,700
Insurance Claims	1,272	153
Net GST recoverable on commitments <sup>1</sup>	7,522	4,131
Total commitments receivable	9,894	44,984
Commitments payable		
Capital commitments		
Buildings and leasehold improvements <sup>2</sup>	(41,984)	(67,023)
Infrastructure, plant and equipment <sup>3</sup>	(13,982)	(369)
Total capital commitments	(55,966)	(67,392)
Other commitments		
Operating Lease $4$	(8)	(11)
Other <sup>5</sup>	(27,865)	(18.896)
Total other commitments	(27,873)	(18,907)
Net commitments by type	(73,945)	(41,315)
BY MATURITY		
Commitments receivable		
One year or less	8 622	40 421
From one to five years	0,022	40,431
Total canital commitments	8 622	4,400
	0,022	++,051
Other commitment income		
One year or less	1,272	153
Total other commitment income	1,272	153
Commitments payable		
Capital commitments		
One year or less	(37,638)	(35,568)
From one to five years	(17,916)	(30,999)
Over five years	(412)	(825)
Total capital commitments	(55,966)	(67,392)
Operating lease commitments		
One year or less	(3)	(3)
From one to five years	(5)	(8)
Total operating lease commitments	(8)	(11)

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



#### SCHEDULE OF COMMITMENTS

as at 30 June 2011 (contd)

2011 BY TYPE \$'000	2010 \$'000
Other Commitments	
One year or less (12,357)	(10,543)
From one to five years (15,508)	(8,353)
Total other commitments (27,865)	(18,896)
Net commitments by maturity (73,945)	(41,315)

1. Commitments are GST inclusive where relevant.

2. Contract for construction of the Australian Tropical Marine Research Facilities Project (ATMRFP) and Indian Ocean Marine Research Centre WA.

3. Purchase orders for the construction of the Great Barrier Reef Ocean Observing System, Scientific Equipment and Vehicles.

4. Operating Lease refers to franking machine.

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

#### SCHEDULE OF CONTINGENCIES

as at 30 June 2011

	2011 \$'000	2010 \$`000
Contingent assets		
Guarantees	579	427
Total contingent assets	579	427

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 schedule should be read in conjunction with the accompanying notes.

Buildings a	and Infrastr	ucture.				Ships.		
Leaseho	hold Pla	ant and	Computer		Office	Launches &	Library	
Improveme \$10	ients Equi	ipment \$'000	Equipment \$'000	Vehicles \$'000	Equipment \$'000	Vessels \$'000	Books \$'000	Total \$'000
By purchase - Government funding 2,1	,174	3,511					1	5,685
By purchase - other	I	3,037	212	172	15	157	ı	3,593
Total additions 2,1	,174	6,548	212	172	15	157		9,278
Buildings a Leaseb	and Infrast hold Pla	tructure ant and	Computer		Office	Ships, Launches &	Library	
Improveme \$10	ients Equ	iipment \$'000	Equipment \$`000	Vehicles \$'000	Equipment \$'000	Vessels \$'000	Books \$'000	Total \$'000
By purchase - Government funding 3,6	,629 13	1,962	- 000	- u 		- u	' v	5,591
by purchase - other Total additions 3.6	12 .642	3,659	520	1,245	14	15 15	26 26	9,190

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

SCHEDULE OF ASSET ADDITIONS

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### NOTE 1: Summary of Significant Accounting Policies

#### 1.1 Objective of Australian Institute of Marine Science

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

AIMS is structured to meet one outcome:

Outcome 1: To enhance scientific knowledge supporting the protection and sustainability of Australia's marine resources.

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

#### 1.2 Basis of Preparation of the Financial Statements

The Financial Statements are general purpose financial statements and are required by clause 1 (b) of the *Commonwealth Authorities and Companies Act 1997* and are general purpose financial statements.

The financial statements have been prepared in accordance with:

- Finance Minister's Orders (FMOs) for reporting periods ending on or after 1 July 2010; 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 in accordance with the historical cost convention, except for certain assets and liabilities 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 FMOs, 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 or a future sacrifice of economic benefits will be required and the amounts of the assets or liabilities can be reliably measured. However, assets and liabilities arising under executor contracts are not recognised unless required by an accounting standard. Liabilities and assets that are unrecognised are reported in the schedule of commitments or the schedule of contingencies.

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

#### 1.3 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 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 revaluation approach.

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.

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# 1.4 New Australian Accounting Standards

No Accounting standard has been adopted earlier than the application date as stated in the standard. AIMS' assessment is that these new standards and interpretations will not have a significant impact on AIMS' financial statements.

# 1.5 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 or 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 AIMS.

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 cost of the transaction.

Revenue is recognised on the stage of completion basis and measured using the proportion of costs incurred to date as compared to the expected actual costs. Where losses are anticipated they are provided for in full. Receivables include contracts receivable and in progress.

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 as at the end of reporting period. 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.* 

# <u>Revenue from Government</u>

Funding received or receivable from agencies (appropriated to the agency 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 or loan.

# 1.6 Gains

# <u>Sale of Assets</u>

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

# 1.7 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.

In 2009-10 Federal Budget, the Government allocated \$55,000,000 for marine science infrastructure as part of its Marine and Climate Super Science Initiative.

#### Change in Accounting Policy

During 2009-10, AIMS received funding of \$18,000,000 from the Education Investment Fund (EIF). This funding was recorded as revenue in the prior year's Financial Statements. Under the program conditions, the funds are used for capital projects and the Department of Innovation, Industry, Science and Research (DIISR) has recognised these payments as capital in 2010-11. To ensure a consistent application with DIISR the EIF payments to AIMS have been recognised as capital in 2010-11. The prior year adjustment has been reflected in the 2009-10 comparative information with a decrease in revenue (Note 4E) of \$18,000,000 and an increase in equity of \$18,000,000 (Statement of Changes in Equity).

#### Other Distributions to Owners

The FMOs require that distributions to owners be debited to contributed equity unless it is in the nature of a dividend. In 2010-11, by agreement with the Department of Finance and Deregulation, AIMS did not relinquish control of any surplus output appropriation funding.

#### 1.8 Employee Benefits

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

Liabilities for 'short-term employee benefits' (as defined in AASB 119 *Employee Benefits*) and termination benefits due within twelve months of the end of reporting period 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.

Other long-term employee benefits are measured as net total of the present value of the defined benefit obligation at the end of the reporting period minus the fair value at the end of the reporting period of plan assets (if any) out of which the obligations are to be settled directly.

#### <u>Leave</u>

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 entity 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 will be applied at the time the leave is taken, including AIMS' 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 has been determined by reference to the work of an actuary as at 30 June 2011. 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 Contributions

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

The CSS and PSS are defined benefit schemes for the Australian Government. The PSSap and Uni Super are defined contribution schemes.

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**Financial Statements** 



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 employees' superannuation scheme at rates determined by an actuary to be sufficient to meet the current cost to the Government. The entity accounts for the contributions as if they were contributions to defined contribution plans.

#### 1.9 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 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 an 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.

#### 1.10 Cash

Cash is recognised at its nominal amount. Cash and cash equivalents include:

- cash on hand, and
- demand 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.

#### **1.11 Financial Assets**

AIMS classifies its financial assets in the following categories:

- held-to-maturity investments, and
- 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 that are recognised 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'. 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 the end of each reporting period.

*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 statement of comprehensive income.

#### **1.12 Jointly Controlled Assets**

AIMS has interests in:

- AIMS @ JCU Joint Venture
- Arafura Timor Research Facility Joint Venture

#### AIMS@JCU Joint Venture

AIMS has entered into joint venture 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 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. As at 30 June 2011 AIMS held \$55,550 (2010: \$252,938) on behalf of the joint venture. This is shown as a liability in AIMS' Financial Report. (Refer Note 16D: Financial Liabilities).

#### Arafura Timor Research Facility Joint Venture

AIMS has entered into joint venture with the Australian National University. AIMS has a 50 per cent share. The purpose of the venture is to maintain a research facility in Darwin that will create a centre of excellence in the field of physical, chemical engineering, information 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.

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## Change in disclosure of the interest held in the ATRF joint venture

In financial year 2010-11, AIMS has adopted the disclosure requirements of AASB 131 Joint Ventures. In financial year 2009-10, the interest in the ATRF was disclosed as jointly- controlled assets in the balance sheet. This change in presentation has been made by restating each of the affected financial statement line items for the prior year as outlined in the table below.

	<b>2010</b> \$'000	Increase/ (Decrease) \$'000	<b>2010</b> ( <b>Restated</b> ) \$'000
Balance sheet (extract)			
Cash on deposit	504	68	572
Trade and other receivables	7,057	26	7,083
Buildings and leasehold improvements	52,021	1,764	53,785
Jointly controlled assets	1,858	(1,858)	-
Net assets	128,696	-	128,696
Statement of Comprehensive Income (extract)			
Supplier expenses	(17,696)	28	(17.668)
Depreciation and amortisation	(7,803)	(28)	(7,831)
Total expenses	45,762	-	45,762
Other Comprehensive Income		301	301
Share of other comprehensive income of Joint		501	501
Ventures	301	(301)	-
Total other comprehensive income	-	-	
Cashflow statement (extract)			
Sales of goods and rendering of services	22,630	(42)	22,588
Suppliers	17,795	29	17,766
Net cash from (used by) operating activities	17,296	(13)	17,283
Net increase (decrease) in cash held	25,910	(13)	25,897
	·		· · ·
Cash and cash equivalents at the beginning of the reporting period	16,669	82	16,751
Cash and cash equivalents at the end of the reporting period	42,580	68	42,648

#### 1.13 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. These 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.

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

#### 1.14 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.

#### 1.15 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 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's accounts immediately prior to the restructuring.

#### 1.16 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 the AIMS' leasehold improvements with a corresponding provision for the 'make good' recognised.

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## **Revaluations**

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

Class of Asset	Fair value measured at
Buildings and Leasehold improvements	Depreciated Replacement Cost
Plant and equipment	Open Market Value where such a market exists or Depreciated Replacement Cost
Computer equipment	Open Market Value where such a market exists or Depreciated Replacement Cost
Vehicles	Open Market Value where such a market exists or Depreciated Replacement Cost
Office equipment	Open Market Value where such a market exists or Depreciated Replacement Cost
Ships, launches and vessels	Open Market Value where such a market exists or Depreciated Replacement Cost
Library books	Open Market Value where such a market exists or Depreciated Replacement Cost

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

Revaluation adjustments were made on a class basis. Any revaluation increment was credited to equity under the heading of asset revaluation reserve except to the extent that it reversed a previous revaluation decrement of the same asset class that was previously recognised in the surplus/deficit. Revaluation decrements for a class of assets were recognised directly in the surplus/ deficit except to the extent that they reversed 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 the entity using, in all cases, the straight-line method of depreciation.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

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

Class of Asset	2011	2010
Buildings and leasehold improvements	5 – 81 years	5 – 81 years
Plant and equipment	2 – 41 years	2 – 41 years
Computer equipment	2 – 25 years	2 – 25 years
Vehicles	3 – 20 years	3 – 20 years
Office equipment	3 – 38 years	3 – 38 years
Ships, launches and vessels	3 – 30 years	3 – 30 years
Library books	3 – 110 years	3 – 110 years



#### <u>Impairment</u>

All assets were assessed for impairment at 30 June 2011. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment 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 was deprived of the asset, its value in use is taken to be its depreciated replacement cost.

#### 1.17 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 the AIMS' software are 2 to 10 years (2009-10: 2 to 10 years).

All software assets were assessed for indications of impairment as at 30 June 2011.

#### 1.18 Inventories

Inventories held for distribution are valued at cost, adjusted for any loss of service potential.

Costs incurred in bringing each item of inventory to its present location and condition are assigned as follows:

- raw materials and stores purchase cost on a first-in-first-out basis; and
- finished goods and work-in-progress cost of direct materials and labour plus attributable costs that can be allocated on a reasonable basis.

#### 1.19 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.

#### 1.20 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 as at the balance date. Associated currency gains and losses are not material.

#### 1.21 Research, Development and Intellectual Property

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

#### 1.22 Contract Research

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.

#### 1.23 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.

## 1.24 Change in accounting policy

There has been a change in accounting policy in respect of transactions with the Government as owner; refer to Note 1.7 for details.

# Note 2: Events after the Reporting Period

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

Note 3: Expenses		
	2011	2010
Note 3A · Employee Repetits	\$'000	\$'000
Wages and salaries	(15 783)	(15.039)
Superannuation.	(10,700)	(15,055)
Defined contribution plans	(1 117)	(1.081)
Defined benefit plans	(1,117) (1.531)	(1,001)
Leave and other entitlements	(1,31) (3249)	(1, -27) (2, 568)
Total employee henefits	(21,690)	(20,115)
1 out employee benefus	(21,080)	(20,115)
Note 3B: Suppliers		
Goods and services		
Contractors	(18,697)	(17,506)
Stationery	(77)	(68)
Total goods and services	(18,774)	(17.574)
Goods and services are made up of:		
Provision of goods - related entities	(6)	(7)
Provision of goods – external parties	(4,823)	(3,811)
Rendering of services - related entities	(3,311)	(670)
Rendering of services – external parties	(10,634)	(13,086)
Total goods and services	(18,774)	(17,574)
Other supplier expenses		
Operating lease rentals	(	
Minimum lease payments	(3)	(3)
Workers compensation expenses	(74)	(91)
Total other supplier expenses	(77)	(94)
		( )
Total supplier expenses	(18,851)	(17,668)
Total supplier expenses	(18,851)	(17,668)
Total supplier expenses Note 3C: Depreciation and Amortisation	(18,851)	(17,668)
Total supplier expenses Note 3C: Depreciation and Amortisation Depreciation:	(18,851)	(17,668)
Total supplier expenses Note 3C: Depreciation and Amortisation Depreciation: Building and leasehold improvements	(1,950)	(17,668)
Total supplier expenses Note 3C: Depreciation and Amortisation Depreciation: Building and leasehold improvements Plant & equipment	(18,851) (1,950) (3,017)	(17,668) (1,965) (2,932) (012)
Total supplier expenses Note 3C: Depreciation and Amortisation Depreciation: Building and leasehold improvements Plant & equipment Computer equipment	(18,851) (1,950) (3,017) (642) (642)	(17,668) (1,965) (2,932) (812) (812)
Total supplier expenses Note 3C: Depreciation and Amortisation Depreciation: Building and leasehold improvements Plant & equipment Computer equipment Vehicles Office	(18,851) (1,950) (3,017) (642) (608) (55)	(17,668) (1,965) (2,932) (812) (601) (51)
Total supplier expenses Note 3C: Depreciation and Amortisation Depreciation: Building and leasehold improvements Plant & equipment Computer equipment Vehicles Office equipment	(18,851) (1,950) (3,017) (642) (608) (55) (1,197)	(17,668) (1,965) (2,932) (812) (601) (54) (1215)
Total supplier expenses          Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (1,187)	(17,668) (1,965) (2,932) (812) (601) (54) (1,215)
Total supplier expenses          Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183)	(17,668) (1,965) (2,932) (812) (601) (54) (1,215) (156)
Total supplier expenses          Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642)	(17,668) (1,965) (2,932) (812) (601) (54) (1,215) (156) (7,735)
Total supplier expenses          Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642)	(17,668) (1,965) (2,932) (812) (601) (54) (1,215) (156) (7,735)
Total supplier expenses          Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intagebles:	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642)	(17,668) (1,965) (2,932) (812) (601) (54) (1,215) (156) (7,735)
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642)	(17,668) $(1,965)$ $(2,932)$ $(812)$ $(601)$ $(54)$ $(1,215)$ $(156)$ $(7,735)$
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total amortisation	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (83)	(17,668) $(1,965)$ $(2,932)$ $(812)$ $(601)$ $(54)$ $(1,215)$ $(156)$ $(7,735)$ $(96)$
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total depreciation	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (83) (7,725)	(17,668) $(1,965)$ $(2,932)$ $(812)$ $(601)$ $(54)$ $(1,215)$ $(156)$ $(7,735)$ $(96)$ $(96)$
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total amortisation         Total depreciation and amortisation	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (83) (7,725)	(17,668) (1,965) (2,932) (812) (601) (54) (1,215) (156) (7,735) (96) (96) (7,831)
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total amortisation         Total depreciation and amortisation         Note 3D: Write-Down and Impairment of Assets	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (7,725)	(17,668) $(1,965)$ $(2,932)$ $(812)$ $(601)$ $(54)$ $(1,215)$ $(156)$ $(7,735)$ $(96)$ $(96)$ $(7,831)$
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total amortisation         Total depreciation and amortisation         Note 3D: Write-Down and Impairment of Assets         Asset write-downs and impairments from:	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (1,187) (183) (7,642) (83) (83) (7,725)	(17,668) $(1,965)$ $(2,932)$ $(812)$ $(601)$ $(54)$ $(1,215)$ $(156)$ $(7,735)$ $(96)$ $(96)$ $(7,831)$
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total amortisation         Total depreciation and amortisation         Note 3D: Write-Down and Impairment of Assets         Asset write-downs and impairments from:         Other	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (7,725)	(17,668) $(1,965)$ $(2,932)$ $(812)$ $(601)$ $(54)$ $(1,215)$ $(156)$ $(7,735)$ $(96)$ $(96)$ $(7,831)$ $(33)$
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total amortisation         Total depreciation and amortisation         Note 3D: Write-Down and Impairment of Assets         Asset write-downs and impairments from:         Other	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (7,725) -	(17,668) $(1,965)$ $(2,932)$ $(812)$ $(601)$ $(54)$ $(1,215)$ $(156)$ $(7,735)$ $(96)$ $(96)$ $(7,831)$ $(33)$ $(33)$
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total amortisation         Total depreciation and amortisation         Note 3D: Write-Down and Impairment of Assets         Asset write-downs and impairments from:         Other         Total write-down and impairment of assets	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (7,725) -	(17,668) $(1,965)$ $(2,932)$ $(812)$ $(601)$ $(54)$ $(1,215)$ $(156)$ $(7,735)$ $(96)$ $(96)$ $(7,831)$ $(33)$ $(33)$
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total depreciation and amortisation         Total depreciation and amortisation         Note 3D: Write-Down and Impairment of Assets         Asset write-downs and impairments from:         Other         Total write-down and impairment of assets         Note 3E: Losses from Asset Sales         Infrastructure, plant and equipment:	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (7,725)	(17,668) (17,668) (2,932) (812) (601) (54) (1,215) (156) (7,735) (96) (7,831) (33) (33)
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total depreciation and amortisation         Total depreciation and amortisation         Note 3D: Write-Down and Impairment of Assets         Asset write-downs and impairments from:         Other         Total write-down and impairment of assets         Infrastructure, plant and equipment:         Proceeds from sale	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (7,725) - -	(17,668) (17,668) (2,932) (812) (601) (54) (1,215) (156) (7,735) (96) (96) (7,831) (33) (33)
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total amortisation         Total depreciation and amortisation         Note 3D: Write-Down and Impairment of Assets         Asset write-downs and impairments from:         Other         Total write-down and impairment of assets         Infrastructure, plant and equipment:         Proceeds from sale         Carrving value of assets sold	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (83) (7,725) (7,725) - - - - - - - - - - - - - - - - - - -	(17,668) $(17,668)$ $(1,965)$ $(2,932)$ $(812)$ $(601)$ $(54)$ $(1,215)$ $(156)$ $(7,735)$ $(96)$ $(96)$ $(7,831)$ $(33)$ $(33)$ $(55)$ $(158)$
Total supplier expenses         Note 3C: Depreciation and Amortisation         Depreciation:         Building and leasehold improvements         Plant & equipment         Computer equipment         Vehicles         Office equipment         Ships, launches and vessels         Library books         Total depreciation         Amortisation:         Intangibles:         Total depreciation and amortisation         Total depreciation and amortisation         Note 3D: Write-Down and Impairment of Assets         Asset write-downs and impairments from:         Other         Total write-down and impairment of assets         Infrastructure, plant and equipment:         Proceeds from sale         Carrying value of assets sold         Total losses from desets sales	(18,851) (1,950) (3,017) (642) (608) (55) (1,187) (183) (7,642) (7,725) (7,725) (7,725) - - - - - - 9 (124) (115)	(17,668) (17,668) (2,932) (812) (601) (54) (1,215) (156) (7,735) (96) (7,831) (33) (33) (33) (33)

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Note 4: Income		
	2011	2010
OWN-SOURCE REVENUE	\$'000	\$'000
Note 4A: Sale of Goods and Rendering of Services		
Provision of goods - external parties	15	49
Rendering of services - related entities	4,336	5,706
Rendering of services - external parties	11,547	11,920
Total sale of goods and rendering of services	15,898	17,675
Note 4B: Interest		
Deposits	4,061	1,703
Total interest	4,061	1,703
Note 4C: Other Revenue		
Insurance claims	338	152
Other	38	30
Total other revenue	376	182
GAINS		
Note 4D: Sale of Assets		
Property, plant and equipment:		
Proceeds from sale	57	595
Carrying value of assets sold	(16)	(424)
Net gain from sale of assets	41	171
REVENUE FROM GOVERNMENT		
Note 4E: Revenue from Government		
Department of Innovation, Industry, Science and Research		
CAC Act body payment item	30,883	30,413
Total revenue from Government	30,883	30,413

# Note 5: Financial Assets

	2011	2010
	\$'000	\$'000
Note 5A: Cash and Cash Equivalents		
Cash on hand	6	6
Cash on Deposit	417	566
Total cash and cash equivalents	423	572
Note 5B: Trade and Other Receivables		
Good and Services:		
Goods and services - related entities	3,983	853
Goods and services - external parties	4,184	5,585
Total receivables for goods and services	8,167	6,438
Other receivables:		
Interest	1,077	645
Other	143	-
Total other receivables	1,220	645
Total trade and other receivables (gross)	9,387	7,083
Receivables are expected to be recovered in:		
No more than 12 months	9,387	7,083
More than 12 months	-	-
Total trade and other receivables (net)	9,387	7,083
Receivables are aged as follows:		
Not overdue	7,526	6,119
Overdue by:		
0 to 30 days	-	-
31 to 60 days	541	840
61 to 90 days	1,209	4
More than 90 days	111	120
Total receivables (gross)	9,387	7,083
Note 5C: Other Investments		
Deposits	77.032	41.824
Deposits on behalf of joint ventures	56	252
Total other investments	77,088	42,076
Total other invactments are expected to be recovered in		
No more than 12 months	77 088	42 076
Total other investments	77,088	42,070
1 out outer investments	77,000	+2,070

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#### Note 6: Non-Financial Assets

	2011 \$'000	2010 \$'000
Note 6A: Buildings and leasehold improvements		
Buildings on crown land:		
Fair value	51,623	52,423
Work in progress	5,503	3,860
	57,126	56,283
Less accumulated depreciation	(111)	(2,498)
Total buildings on crown land	57,015	53,785

No indicators of impairment were found for buildings on crown land. No buildings are expected to be sold or disposed of within the next 12 months.

#### Note 6B: Infrastructure, Plant and Equipment

Plant and equipment:		
Fair value	19,170	16,065
Work in progress	4,911	1,622
	24,081	17,687
Less accumulated depreciation	(6,486)	(3,560)
Total plant and equipment	17,595	14,127
Computer equipment		
Fair value	2 392	2 378
Work in progress	42	2,570
work in progress		2 417
I and a second data data a single a	2,434	2,417
Less accumulated depreciation	(1,480)	(1,001)
Total computer equipment	954	1,416
Vehicles		
Fair value	2,178	2,156
Work in progress	31	-
	2,209	2,156
Less accumulated depreciation	(993)	(461)
Total vehicles	1,216	1,695
Office equipment		
Fair value	235	216
Work in progress	-	5
	235	221
Less accumulated depreciation	(121)	(67)
Total office equipment	114	154
Ships, launches and vessels:		40.450
Fair value	18,595	18,450
Work in progress	5	-
	18,600	18,450
Less accumulated depreciation	(2,678)	(1,496)
Total ships, launches and vessels	15,922	16,954
Library books		
Fair value	2 800	2 801
Less accumulated depreciation	(376)	(194)
Total library books	2.424	2.607
Total infrastructure, plant and equipment:		
Gross carrying value (at fair value)	45,371	42,066
Work in progress	4,988	1,666
	50,359	43,732
Less accumulated depreciation	(12,134)	(6,779)
Total infrastructure, plant and equipment	38,225	36,953

No indicators of impairment were found for infrastructure, plant and equipment.

No infrastructure, plant or equipment is expected to be sold or disposed of within the next 12 months.

Note 6C: Reconciliation of the Opening and Closing Balar	ices of Property, Pl	ant and Equip	oment (2010-1	1)				
	<b>Buildings and</b>					Ships,		
	Leasehold	Plant and	Computer		Office	Launches	Library	
	improvements	Equipment	Equipment	Vehicles	Equipment	& Vessels	Books	Total
	\$2000	\$`000	\$2000	\$`000	\$`000	\$`000	\$,000	\$`000
As at 1 July 2010								
Gross book value	56,283	17,687	2,417	2,156	221	18,450	2,801	100,015
Accumulated depreciation/amortisation and impairment	(2,498)	(3,560)	(1,001)	(461)	(67)	(1,496)	(194)	(9,277)
Net book value 1 July 2010	53,785	14,127	1,416	1,695	154	16,954	2,607	90,738
Additions:								
By purchase	2,173	6,548	212	172	15	157	•	9,277
Revaluations recognised in other comprehensive income	3,007	•		•	'		•	3,007
Depreciation/amortisation expense	(1,950)	(3,017)	(642)	(809)	(55)	(1,187)	(183)	(7,642)
Other disposals		(63)	(32)	(43)		(2)		(140)
Net book value 30 June 2011	57,015	17,595	954	1,216	114	15,922	2,424	95,240
Net book value as of 30 June 2011 represented by:								
Gross book value	57,126	24,081	2,434	2,209	235	18,600	2,800	107,485
Accumulated depreciation/amortisation	(111)	(6,486)	(1,480)	(993)	(121)	(2,678)	(376)	(12, 245)
	57,015	17,595	954	1,216	114	15,922	2,424	95,240

Note 6: Non-Financials Assets (contd)

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Financial Statements 

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Note 6C: Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment (2009-10)

	<b>Buildings and</b>					Ships,		
	Leasehold	Plant and	Computer		Office	Launches	Library	
	improvements \$'000	Equipment \$'000	Equipment \$'000	Vehicles \$'000	Equipment \$`000	& Vessels \$'000	Books \$'000	Total \$'000
As at 1 July 2009	-			-		-		-
Gross book value	52,673	14,166	1,927	1,548	207	18,496	2,706	91,723
Accumulated depreciation/amortisation and impairment	(848)	(656)	(208)	(105)	(13)	(290)	(38)	(2,158)
Net book value 1 July 2009	51,825	13,510	1,719	1,443	194	18,206	2,668	89,565
Additions:								
By purchase	3,642	3,659	520	1,245	14	15	95	9,190
Revaluations recognised in other comprehensive income	301	I	I	I	I	I	I	301
Depreciation/amortisation expense	(1,965)	(2,932)	(812)	(601)	(54)	(1,215)	(156)	(7, 735)
Other disposals	(18)	(110)	(11)	(392)	I	(52)	I	(583)
Net book value 30 June 2010	53,785	14,127	1,416	1,695	154	16,954	2,607	90,738
Net book value as of 30 June 2010 represented by:								
Gross book value	56,283	17,687	2,417	2,156	221	18,450	2,801	100,015
Accumulated depreciation/amortisation	(2.498)	(3.560)	(1.001)	(461)	(67)	(1,496)	(194)	(9.277)

# Revaluation of non-financial assets

All revaluations were conducted in accordance with the revaluation policy stated at Note 1. On 30th June 2011 independent valuers, Pickles Valuation Services confirmed that net book valuation is in line with Fair Value under the Standard AASB 116.

90,738

2,607

16.954

154

1,695

1,416

14.127

53.785

Financial Statements

# Note 6: Non-Financial Assets (contd)

<u>Note 6D: Intangibles</u>	2011	2010
Computer software at cost:	\$'000	\$'000
Internally developed – in use	1,851	260
Work in progress at cost	60	852
Less accumulated amortisation	1,911 (225)	1,112 (146)
Total intangibles (non-current)	1,686	966

No indicators of impairment were found for intangible assets. No intangibles are expected to be sold or disposed of within the next 12 months.

#### Note 6E: Reconciliation of the Opening and Closing Balances of Intangibles (2010-11)

	Computer	
	software	Total
	\$'000	\$'000
As at 1 July 2010		
Gross book value	1,112	1,112
Accumulated amortisation and impairment	(146)	(146)
Net book value 1 July 2010	966	966
Additions:		
Internally developed	733	733
Purchased	70	70
	803	803
Amortisation	(83)	(83)
Net book value 30 June 2011	1,686	1,686
Net book value as of 30 June 2011 represented by:		
Gross book value	1,911	1,911
Accumulated amortisation and impairment	(225)	(225)
	1,686	1,686

#### Note 6E: Reconciliation of the Opening and Closing Balances of Intangibles (2009-10)

	<u> </u>	
	Computer	
	software	Total
	\$'000	\$'000
As at 1 July 2009		
Gross book value	256	256
Accumulated amortisation and impairment	(50)	(50)
Net book value 1 July 2009	206	206
Additions		
Internally developed	856	856
Amortisation	(96)	(96)
Net book value 30 June 2010	966	966
Net book value as of 30 June 2010 represented by:		
Gross book value	1,112	1,112
Accumulated amortisation and impairment	(146)	(146)
	966	966

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Note 0: Noll-Fillancial Assets (collicu)		
	2011 \$'000	2010 \$'000
Note 6F: Inventories	+	·
Inventories held distribution:		
Inventories held for distribution	194	211
Total inventories	194	211
All inventories are expected to be distributed in the next 12 months.		
Note 6G: Other Non-Financial Assets		
Prepayments	309	345
Total other non-financial assets	309	345

Total other non-financial assets - are expected to be recovered in:		
No more than 12 months	309	345
Total other non-financial assets	309	345

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

Note	7:	Pav	vab	les
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	2011	2010
	\$'000	\$'000
Note 7A: Supplier Payables		
Trade creditors and accruals	(2,016)	(1,851)
Total supplier payables	(2,016)	(1,851)
Supplier payables expected to be settled within 12 months:		
Related entities	(429)	(112)
External parties	(1,587)	(1,739)
Total supplier payables	(2,016)	(1,851)
All supplier payables are expected to be settled within 12 months.		
Settlement was usually made within 30 days.		
Note 7B: Other Payables		
Consultancies and grants	(2,226)	(2,784)
Joint venturers	(56)	(253)
Salaries and wages	(593)	(493)
Other	(26)	(62)
Total other payables	(2,901)	(3,592)
Total other payables are expected to be settled in:		
No more than 12 months	(2,901)	(3,592)
Total other payables	(2,901)	(3,592)



#### Note 8: Non-Interest Bearing Liabilities

Note 84 : Non-Interest Bearing Loans	2011 \$'000	2010 \$'000
Loans from Government	(1,500)	(1,500)
Total non-interest bearing loans	(1,500)	(1,500)
Payable:		
In more than five years	(1,500)	(1,500)
Total non-interest bearing loans	(1,500)	(1,500)

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		
	2011	2010
	\$'000	\$'000
Note 9A: Employee Provisions		
Annual leave	(3,034)	(2,687)
Long service leave	(3,501)	(2,981)
Superannuation	(716)	(618)
Workers compensation	(14)	(15)
Fringe benefit tax	(71)	(51)
Total employee provisions	(7,336)	(6,352)
Employee provisions are expected to be settled in:		
No more than 12 months	(6,715)	(5,966)
More than 12 months	(621)	(386)
Total employee provisions	(7,336)	(6,352)

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.

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Note 10: Cash Flow Reconciliation		
	2011	2010
	\$2011	\$2010
Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement	\$ 000	\$ 000
Cash and cash equivalents as per:		
Cash flow statement	77,511	42,648
Balance sheet	77,511	42,648
Difference		-
Balance Sheet comprises of:		
Cash and cash equivalents	423	572
Investments	77,088	42,076
Total	77,511	42,648
Reconciliation of net cost of services to net cash from operating		
Net cost of services	(28.012)	(26.031)
Add revenue from Government	30,883	30,413
Adjustments for non-cash items		
Depreciation / amortisation	7,725	7,831
Net write down of non-financial assets	-	33
Gain on disposal of assets	(41)	(171)
Loss on disposal of assets	115	93
Changes in assets / liabilities		
(Increase) / decrease in net receivables	697	2,374
(Increase) / decrease in inventories	17	41
(Increase) / decrease in prepayments	36	143
Increase / (decrease) in employee provisions	985	624
Increase / (decrease) in supplier payables	(528)	1,933
Net cash from operating activities	11,877	17,283

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#### Note 11: Contingent Liabilities and Assets

	Guarantee	es	Total	
	2011	2010	2011 \$'000	2010 \$`000
	\$'000	\$'000		
Contingent assets				
Balance from previous period	120	427	120	427
New	459	-	459	-
Total contingent assets	579	427	579	427

#### **Quantifiable Contingencies**

AIMS holds performance guarantees of \$579,000 (2010:\$427,000).

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 \$1.5 million. This is a forgiveness amount providing certain criteria are met over the next year.

#### **Unquantifiable Contingencies**

At 30 June 2011, AIMS is not aware of any material unquantifiable contingencies.

Note 12: Directors Remuneration		
	2,011 No.	2,010 No.
The number of non-executive directors of AIMS included in these figures are shown below in the relevant remuneration bands:		
\$15,000 to \$40,000	6	7
Total	6	7
Total remuneration received or due and receivable by directors	\$	\$
of AIMS	(152,993)	(164,164)

The Directors (members of council) of AIMS are appointed by the Governor General.

Remuneration of Chief Executive Officer is included in Note 14: Senior Executive Remuneration.

#### Note 13: Related Party Disclosures

#### Loans to Directors and Director-Related Entities

There were no loans made to any Director or Director-related entities during the period (2010: Nil)

#### Other transactions with directors or director-related entities

There were no other transactions with Directors or Director related entities during the period (2010: Nil).



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### Note 14: Senior Executive Remuneration

#### Note 14A: Senior Executive Remuneration Expense for the Reporting Period

2011	2010
\$	\$
(882,365)	(917,626)
(58,270)	660
(167,982)	(97,130)
(83,878)	(82,312)
(1,192,495)	(1,096,408)
(150,351)	(138,674)
(150,351)	(138,674)
(21,235)	(22,666)
(21,235)	(22,666)
(1,364,081)	(1,257,748)
	2011 \$ (882,365) (58,270) (167,982) (83,878) (1,192,495) (150,351) (150,351) (150,351) (21,235) (21,235) (21,235) (1,364,081)

During the year the entity paid \$Nil in termination benefits to senior executives (2010: \$Nil)

#### Notes:

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1. Note 14A was prepared on an accrual basis (so the performance bonus expenses disclosed above differ from the cash 'Bonus paid' in Note 14B).

2. Note 14A excludes acting arrangements and part-year service where remuneration expensed for a senior executive was less than \$150,000.

3. "Other " includes motor vehicle allowances.
Note 14: Senior Executive Remuneration

Note 14B: Average Amual Remuneration Packages and Bonus Paid for Substantive Senior Executives as at the end of the Reporting Period

		as at 30 June	2011				as	at 30 June 20	9	
		Fix	ed elements				Ŧ	ixed elements		
Fixed Elements and Bonus Paid <sup>1</sup>	Senior Executives No.	Salary \$	Allowances \$	Total \$	Bonus paid <sup>2</sup> \$	Senior Executives No.	Salary \$	Allowances \$	Total \$	Bonus paid <sup>2</sup> \$
Total remuneration (including part-time arrangements):										
\$120,000 to \$149,999	7	128,319	14,005	142,324	•	2	125,803	12,893	138,696	
\$150,000 to \$179,999	•			•	•	1	165,525	14,181	179,706	32,955
\$180,000 to \$209,999	7	176,763	14,240	191,003	33,210	1	182,536	18,889	201,425	32,601
\$240,000 to \$269,999		'		•	•	1	249,145	18,537	267,682	44,509
\$270,000 to \$299,999	1	262,268	20,134	282,402	96,016	1	1	1	I	I
Total	5					5				

Votes:

1. This table reports substantive senior executives who were employed by AIMS at the end of the reporting period. Fixed elements were based on the employment agreement of each individual. Each row represents an average annualised figure (based on headcount) for the individuals in that remuneration package band (i.e. the "Total' column). This represents average actual bonuses paid during the reporting period in that remuneration package band. The "Bonus paid' was excluded from the "Total" calculation, (for the purpose of determining remuneration package bands). The "Bonus paid' within a particular band may vary between financial years due to various factors such as individuals commencing with or leaving AIMS during the financial year.

# Variable Elements:

With the exception of bonuses, variable elements were not included in the 'Fixed Elements and Bonus Paid' table above. The following variable elements were available as part of senior executives' remuneration package

(a) Bonuses:

• Bonuses were based on the performance rating of each individual. The maximum bonus that an individual can receive was 32 per cent of his base salary.

(b) On average senior executives were entitled to the following leave entitlements:

• Annual Leave (AL): entitled to 25 days (2010: 25 days) each full year worked (pro-rata for part-time SES);

• Special Leave (PL): entitled to 15 days (2010: 15 days) or part-time equivalent; and

• Long Service Leave (LSL): in accordance with Long Service Leave (Commonwealth Employees) Act 1976

(c) Senior executives were members of one of the following superannuation funds:

• Commonwealth Superannuation Scheme (CSS): this scheme is closed to new members, and employer contributions were averaged 22.4 per cent (2010: 21.4 per cent) (including productivity component). More information on CSS can be found at http://www.css.gov.au;

• Public Sector Superannuation Scheme (PSS): this scheme is closed to new members, with current employer contributions were set at 14.2 per cent (2010: 13.1 per cent) (including productivity component) More information on PSS can be found at http://www.pss.gov.au;

• Public Sector Superannuation Accumulation Plan (PSSap): employer contributions were set at 15.4 percent (2010: 15.4 per cent), and the fund has been in operation since July 2005. More information on SSap can be found at http://www.pssap.gov.au.

(d) Various salary sacrifice arrangements were available to senior executives including super, motor vehicle and expense payment fringe benefits.

# Note 14C: Other Highly Paid Staff

During the reporting period, there was 1 employee (2010: Nil employees) whose salary plus performance bonus was more than \$150,000. This employee did not have a role as senior executive or director and was therefore not disclosed as senior executives in Note 14A and Note 14B.

Financial Statements

Note 15: Kemuneration of Additors		
	2011	2010
	\$'000	\$'000
Financial statement audit services were provided to AIMS.		
Fair value of the services provided:		
Audit Services	(48)	(48)
Total	(48)	(48)

No other services were provided by the auditors of the financial statements.

Note 16: Financial Instruments		
	2011	2010
	\$'000	\$'000
Note 16A: Categories of Financial Instruments	φ 000	φ 000
Financial Assets		
Held-to-maturity:		
Investments	77.088	42.076
Total	77.088	42.076
Loans and receivables:		,
Cash at bank	423	572
Receivables for goods and services	8.167	6 4 3 8
Other receivables	1.077	645
Total	9.667	7.655
Carrying amount of financial assets	86.755	49,731
		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Financial Liabilities		
At amortised cost:		
Trade creditors	(2,016)	(1,851)
Consultancies and grants	(2,226)	(2,784)
Joint venturers	(56)	(253)
Loans from Government	(1,500)	(1,500)
Carrying amount of financial liabilities	(5,798)	(6,388)
Note 16B: Net Income and Expense from Financial Assets		
Held-to-maturity		
Interest revenue (see note 4B)	4.061	1.703
Net gain/(loss) from financial assets	4,061	1,703
Note 16C: Net Income and Expense from Financial Liabilities		
Financial liabilities - at amortised cost		
Interest expense	7	18
Net gain/(loss) from financial liabilities	7	18

The total interest expense from financial liabilities not at fair value through profit or loss was \$7,000 (2010:\$18,000)

### Note 16: Financial Instruments (continued)

### Note 16D: Fair Value of Financial Instruments

	Carrying	Fair	Carrying	Fair
	amount	value	amount	value
	2011	2011	2010	2010
	\$'000	\$'000	\$'000	\$'000
Financial Assets				
Cash at bank	423	423	572	572
Receivables for goods and services (net)	8,167	8,167	6,438	6,438
Other Receivables	1,077	1,077	645	645
Investments	77,088	77,088	42,076	42,076
Total	86,755	86,755	49,731	49,731
Financial Liabilities				
Trade creditors	(2,016)	(2,016)	(1,851)	(1,851)
Consultancies and grants	(2,226)	(2,226)	(2,784)	(2,784)
Joint Venturers	(56)	(56)	(253)	(253)
Loans from Government	(1,500)	(1,500)	(1,500)	(1,500)
Total	(5,798)	(5.798)	(6.388)	(6.388)

The fair values disclosed in the above table have been determined based on the following methodology: Cash and cash equivalents, receivables for goods and services, trade and other payables are short-term instruments in nature whose carrying value is equivalent to fair value. Trade and other payables excludes amounts relating to the provision of annual leave, which is not considered a financial instrument.

Fair value for loans from Government, which is determined for disclosure purposes, is calculated based on the present value of future principal and interest cash flows, discounted at the market rate of interest at the reporting date.

#### 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 Tax Office in the form of a Goods and Services Tax refund. The maximum exposure to credit risk is the risk that arises from potential default of a debtor. This amount is equal to the total amount of trade receivables (2011: \$8,165,000 and 2010: \$6,412,000).

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

In addition, AIMS has policies and procedures that guide employees debt recovery techniques that are to be applied.

### The following table illustrates the entity's gross exposure to credit risk, excluding any collateral or credit enhancements.

	2011 \$'000	2010 \$'000	
Financial assets			
Receivables for Goods and services	8,167	6,438	
Total	8,167	6,438	

AIMS holds no collateral to mitigate against credit risk.

#### Note 16: Financial Instruments (continued)

#### Note 16E: Credit Risk (continued)

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

	Not past due nor impaired	Not past due nor impaired	Past due or impaired	Past due or impaired
	2011	2010	2011	2010
	\$'000	\$'000	\$'000	\$'000
Investments	77,088	42,076	-	-
Cash at bank	423	572	-	-
Receivables for goods and services	6,306	5,474	1,861	964
Total	83.817	48.122	1.861	964

Credit risk related to balances with banks is managed by the management committee in accordance with approved council policy. Such policy requires that surplus funds are only invested with Commonwealth Bank of Australia, Wespac Banking Corporation, National Australia Bank and Australia and New Zealand Banking Group Ltd. The maximum amount invested with an eligible authorised deposit-taking institution shall not exceed 50% of total investments.

#### Ageing of financial assets that were past due but not impaired for 2011

	0 to 30	31 to 60	61 to 90	90+		
	days	days	days	days	Total	
	\$'000	\$'000	\$'000	\$'000	\$'000	
Receivables for goods and services	-	541	1,209	111	1,861	
Total	-	541	1.209	111	1.861	

Ageing of financial assets that were past due but not impaired for 2010

	0 to 30	31 to 60	61 to 90	90+		
	days	days	days	days	Total	
	\$'000	\$'000	\$'000	\$'000	\$'000	
Receivables for goods and services	-	840	4	120	964	
Total	-	840	4	120	964	

#### 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 non-derivative financial liabilities 2011

	On	within 1	1 to 2	2 to 5	> 5	
	demand	year	years	years	years	Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Trade creditors	-	(2,016)	-	-	-	(2,016)
Consultancies and grants	-	(2,226)	-	-	-	(2,226)
Joint ventures	-	(56)	-	-	-	(56)
Loans from Government	-	-	-	-	(1,500)	(1,500)
Total	-	(4,298)	-	-	(1,500)	(5,798)

#### Maturities for non-derivative financial liabilities 2010 On within 1 1 to 2 2 to 5 > 5 demand Total year years years years \$'000 \$'000 \$'000 \$'000 \$'000 \$'000 Trade creditors (1,851) (1,851)Consultancies and grants (2,784)(2,784)(253) Ioint ventures (253)Loans from Government (1.500)(1.500)Total (4,888)(1,500)(6,388)

AIMS has no derivative financial liabilities in both the current and prior year.

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 16: Financial Instruments (continued)

### Note 16G: Market Risk

#### Risk to which AIMS is exposed 2011

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'.

### Note 17: Reporting on Outcomes

### Note 17A: Net Cost of Outcome Delivery

	0	UTCOME 1
	2011	2010
	\$'000	\$'000
Expenses	(48,388)	(45,762)
Income from non-government sector		
Sales of goods and rendering of services	15,898	17,675
Interest	4,061	1,703
Gain from disposal of assets	41	171
Other revenue	376	182
Total	20,376	19,731
Net cost of outcome delivery	(28,012)	(26,031)

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**Financial Statements** 



### —Supplementary Financial Information (Unaudited)

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### NOTE 1:

#### **Revenue comparison**

	2007	2008	2009	2010	2011
_	\$'000	\$'000	\$'000	\$'000	\$'000
Appropriation revenue					
Operating	18,913	21,073	22,069	22,392	22,862
Asset replacement	5,557	5,557	5,557	8,021	8,021
Total appropriation revenue	24,470	26,630	27,626	30,413	30,883
Non-appropriation revenue					
Sale of goods and rendering of services	6,040	13,258	18,324	17,675	15,898
Interest	1,267	1,259	1,469	1,703	4,061
Revenues from joint ventures	365	121	148		
Other revenue	2,841	4,316	2,105	353	417
Total non-appropriation revenue	10,513	18,954	22,046	19,731	20,376
Total Revenue	34,983	45,584	49,672	50,144	51,259
Non-appropriation ratio	30%	42%	44%	39%	40%

Sale of goods and rendering of services includes consultancies, grants and contract collaborations. Non-appropriation ratio is percentage non-appropriation revenue of total revenue.

### NOTE 2:

### Source of sale of goods and rendering of services by sector

	2,007	2,008	2,009	2,010	2011
	\$'000	\$'000	\$'000	\$'000	\$'000
Australian Government	1,980	3,562	4,055	5,302	5,400
Australian joint Government/industry	2,489	1,006	1,646	1,271	1,141
International governments	880	93	153	63	140
Australian industry	407	8,317	12,185	10,792	9,006
International industry	220	212	268	198	196
Sale of goods	64	68	17	49	15
	6,040	13,258	18,324	17,675	15,898



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**Financial Statements** 



### SUPPLEMENTARY FINANCIAL INFORMATION (UNAUDITED)

### NOTE 3:

### Cost of Output by Research Teams

	Variable	Salaries	Depreciation	Overheads	Total
	\$'000	\$'000	\$'000	\$'000	\$'000
Supporting Sustainable Use of Marine Biodiversity	2,072	3,640	201	5,848	11,761
Supporting Sustainable Use of Marine Biodiversity WA	3,901	2,884	90	4,634	11,509
Measuring Water Quality and Ecosystem Health	1,789	2,732	427	4,389	9,337
Responding to Climate Change	3,418	2,204	866	3,540	10,028
Understanding Marine Microbes and Symbioses	1,092	1,728	154	2,778	5,752
Total	12,272	13,188	1,738	21,189	48,387
Percentage of total expenses	25%	27%	4%	44%	100%



### Part Four: Appendices

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Coral cover survey on the GBR, North Queensland. Image: Juergen Freund.

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### 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));
- Out of money appropriated by the Parliament for the purpose, the Finance Minister has power to lend money to the Institute (Section 42A);
- 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.



# Appendices

### 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.

- 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 ndustrial waste waters.
- 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.
- 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.
- Sustainable use of Australia's biodiversity Managing and protecting Australia's terrestrial and marine biodiversity both for its own value and to develop longterm 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.

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### 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.

- 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).
- 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.
- 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.
- 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 hreats 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.

	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> <li>Number of peer reviewed scientific publications reported quarterly against previous year.</li> <li>Trend in publication level.</li> </ul>	Annual
Citation analysis	Ongoing improvement in the quality and impact of AIMS" journal publications.	<ul> <li>Retrospective citation analysis using Science Citation Index.</li> </ul>	5 yearly
Increase science capacity	Increase in number of post-doc positions. Target is annual average of 10 FTEs (by 2009).	• Number of research scientists and postdoc.	Annual
External assessment and review	Ongoing improvement of AIMS' research performance.	• Expert review of the quality and impact of AIMS' Research Performance.	Within quadrennium
Enhancing impact/ re	lationships		
Joint ventures	Enhance impact and research capacity through co-investment in research.	O Joint ventures and current status.	Annual
Leverage through collaboration	Maintain and focus AIMS' collaborative approach to research.	<ul> <li>Collaborations (collaborative research projects) and significant outputs.</li> <li>Number of collaborations and percentage of research papers from collaborations.</li> </ul>	Annual
Enhance Australia's future capabilities in	Contribution to teaching.	<ul> <li>Students, completions and significant outputs reported quarterly.</li> </ul>	Annual
		<ul> <li>Number of jointly supervised postgraduate students (PhD and Masters, with trend).</li> </ul>	
		<ul> <li>Number of internships and undergraduates (with trend).</li> </ul>	
Effective use of resour	rces		
Project management	Timely delivery of project milestones.	<ul> <li>Percentage of milestones completed on time.</li> </ul>	Annual

### **Key Performance Goals**



	KEY PERFORMANCE GOALS	MEASURE/INDICATOR	FREQUENCY
Operational efficiency	Improve efficiency of (providing) key support.	<ul> <li>Number of continuous improvement projects completed.</li> </ul>	Annual
Strategic alliances	Enhance research delivery by the development and maintenance of alliances with organisations that complement AIMS' skills and infrastructure.	• Strategic alliances and current status.	Annual
Organisational growt	th		
Increase revenue	Increase revenue to support investment in AIMS' research.	• Trend in total revenue reported annually.	Annual
Enhance core capabilities	Attract and retain key 'talent' through staff satisfaction.	<ul> <li>Report examples of actions taken and improvements achieved.</li> </ul>	Annual
Develop staff	Seek improvements to integration of staff training into organisations goals.	<ul> <li>Report examples of actions taken and improvements achieved.</li> </ul>	Annual
Technology diffusion			
Transfer to users	Enhance user uptake of AIMS' research.	<ul> <li>Practices, instruments and processes developed by AIMS that have been adopted by users in industry, government and the community.</li> </ul>	Annual
Funding mix/Source of revenue	Enhance engagement with industry.	<ul> <li>External earnings reported against previous year.</li> </ul>	Annual
		<ul> <li>Trend in external earnings and source of funds.</li> </ul>	
Health, Safety and En	vironmental Performance		
Safety index	Improved safety culture.	<ul> <li>Report against indicators and provide examples of improvements.</li> </ul>	Annual
Reduce environmental footprint	Ongoing improvements to AIMS' operations to reduce our environmental footprint.	<ul> <li>Report examples of actions taken and improvements achieved.</li> </ul>	Annual

# Appendices

### 4. Science Publications 2010

### Journals

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### **Books and Book Chapters**

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### 5. AIMS Scientists' Membership of External Committees and NGOs

### **International Forum**

Arafura Timor Seas Expert Forum (ATSEF) - Steering Committee Association of Official Analytical Chemists (AOAC) Presidential Task Force on Marine and Freshwater Toxins Australia-India Strategic Research Fund Advisory Panel (AISRF) – Advisory Panel Census of Marine Life – Beyond 2010 Science Planning Committee Census of Marine Life - International Scientific Steering Committee (Chair) Convention on Biological Diversity's Panel of Experts on Access and Benefit Sharing - Australian rep FAO Steering Committee on Holothurian Fishing Global Environment Fund, Coral Disease Working Group Great Barrier Reef Foundation - International Scientific Advisory Committee (ISAC) Intergovernmental Panel on Climate Change (IPCC) Working Group on Coastal Wetlands International Atomic Energy Agency (Expert Consultant to United Nations Development Project 'Transfer of Receptor Binding Assay for Harmful Algal Toxins') International Marine Biotechnological Association - International Conference Committee International Marine Biotechnology Association (IMBA) - Board Member International Society for Microbial Ecology - Board Member IOC/CI/UDP International Blue Carbon Scientific Advisory Committee National Irish Marine Biotechnology Steering Committee Save Our Seas Foundation: member of the Conservation and Science Advisory Panel Stratos/IISD/Swiss Government's Access and Benefit Sharing Tool Project Advisory Committee World Bank Coral Reef Restoration and Remediation Working Group World Porifera Database, Taxonomic Editor for bioeroding sponges

### **National Forum**

AIMS@JCU - Management Committee Antarctic Research Assessment Committee (ARAC) Life Sciences - Chair Antarctic Science Advisory Committee (ASAC) ANZLIC Marine Community Profile Metadata Standards Governance Committee Arafura Timor Research Facility (ATRF) Governance Group Australian Biodiscovery Workshop Group (Commonwealth, States and Territories) of the Biotechnology Liaison Committee Australian Centre for Tropical Freshwater Research (ACTFR) Advisory Committee 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 - Biolndustry Panel 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 Commonwealth Environment Research Facilities Program (CERF) Marine Biodiversity Hub - Management Team Commonwealth Inter-departmental Committee on Access to Genetic Resources Coordination Committee for Science & Technology (CCST) – Scientific Member



Coral Reef Environmental Observatory Network (CREON) - Co-Chair Council of Australasian Museum Directors (CAMD) 2010 International Year of Biodiversity, Steering Committee Darwin City Council Environmental Management Plan Advisory Committee Darwin Harbour Advisory Committee (DHAC) Dredging Expert Panel (Pluto Project, WA) Fitzroy Partnership for River Health Science Panel GBRMPA Ecosystem Reef Advisory Committee (ERAC) GBRMPA Reef Water Quality Protection Plan (RWQPP) Project Committee **GBRMPA Trawl ERA Advisory Committee GBROOS** Technical Reference Group 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 Healthy Waterways Alliance Mackay Whitsunday Ecosystem Water Quality Think Tank IMOS Australian National Moorings Network Facility IMOS Facility for Automated Intelligent Monitoring of Marine Systems (FAIMMS) Institute of Marine Engineering, Science & Technology (IMarEST), Chair - NQ sector Integrated Marine Observing System (IMOS) Board Integrated Marine Observing System (IMOS) Steering Committee James Cook University Marine and Aquaculture Research Facilities Committee James Cook University School of Business - Industry Advisory Panel Kakadu Research Advisory Committee Marine and Tropical Sciences Research Facility (MTSRF) GBR Operations Committee Marine and Tropical Sciences Research Facility (MTSRF) Great Barrier Reef Steering Committee Marine and Tropical Sciences Research Facility (MTSRF) Torres Strait Program Steering Group Marine National Facility – Future Research Vessel Technical Advisory Group Marine Stinger Advisory Committee - Research Working Group National Environmental Research (NERP) Marine Biodiversity Hub – Steering Committee National Environmental Research (NERP) Tropical Ecosystems Hub – Steering Committee National Environmental Research (NERP) Tropical Ecosystems Hub – Science Leader National Facilities Ship Scientific Advisory Committee National Strategic Rural Research and Development Investment Plan NT EPA Board NT Land and Sea Management Board Oceans Policy Science Advisory Group (OPSAG) - Chair Palm Island Sponge Farming Steering Committee Queensland Biotechnology Advisory Committee Reef and Rainforest Research Centre Pty Ltd - Board of Directors Reef Check Australia Scientific Advisory Committee **Reef Water Quality Protection Plan Independent Science Panel** South East Queensland Expert Advisory Panel on Water Recycling Torres Strait Scientific Advisory Committee TropLinks - Board member Twin Cities Fish Stocking Society – Scientific Advisor 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 65-66 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.

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.

Other information may be available, subject to compliance with the Institute's requirements, as specified in the annual report.

The authorised decision-makers for the Institute under the FOI Act are:

Chief Executive Officer Australian Institute of Marine Science PMB No 3, Townsville Mail Centre Townsville Qld 4810 Management Group Australian Institute of Marine PMB No. 3, Townsville Mail Centre Townsville Qld 4810

# 7. Expert Committees, Advice, Submissions and Visiting Scientists

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

- Ian Poiner was the Chair of Oceans Policy Science Advisory Group (OPSAG) and funded a position in DIISR to provide secretariat support.
- Ian Poiner continued his role as Chair of the International Scientific Steering Committee of the Census of Marine Life with the Census delivered in London in October 2010.
- O Richard Brinkman joint leader of the Biodiversity Observation theme of CoML's "Life in a changing ocean".
- O Mike Hall on 'National Fisheries and Aquaculture RD&E Strategy Research Providers' Network' committee.
- O Libby Evans-Illidge invited to join the Inter Departmental Committee on Implementation of the Nagoya Protocol.
- Britta Schaffelke joined expert panels on ecosystem and water quality monitoring: Fitzroy Partnership Science Panel (first meeting Brisbane 21/06/10); Paddock to Reef Monitoring Program; Mackay Whitsunday Healthy Waterways Alliance Ecosystem / Water Quality Think Tank.
- Dan Alongi attended the NGGIP-IPCC Expert Meeting on Scoping Additional Guides on Wetlands. Expert Group to develop procedures for mangroves, salt marshes and tidal freshwater marshes.
- Dan Alongi attended the first meeting of the IUCN/UNESCO "Blue Carbon" International Scientific Working Group", 15-17 February 2011 in Paris. Conservation International, IUCN and UNESCO-IOC have formed this expert working group to coordinate and guide establishment of coastal "blue" carbon as a conservation and management tool contributing to climate change mitigation and the development of associated conservation financing mechanisms.
- Janice Lough provided expert input on climate change and coral reefs to the University of Oxford "Dangerous Climate Change Assessment Project" (DanCCAP).
- Mark Meekan was appointed to Advisory Committee for Save Our Seas Foundation with responsibility for projects in the Indian Ocean and South East Asia.
- Andrew Heyward has been appointed to the WA Marine Parks and Reserves Authority's temporarily reformed Scientific Advisory Committee. This is specifically to assist with the proposed MPAs for the Kimberley, such as one in Camden Sound. (DEC planning for the proposed Camden Sound Marine Park).
- O WA staff invited onto oil & gas industry environmental advisory committees: RioTinto & WEL.
- Andrew Heyward met Rio Tinto and SKM as a member of their Dredging Environmental Advisory Committee. The focus of discussion was the current large dredging program at Cape Lambert. Andrew Heyward attended, as a committee member, the first meeting of Woodside Energy Limited's DEEP committee, providing independent advice on environmental issues related to downstream processing in the James Price Point area.
- Dianne Brinkman and Lyndon Llewellyn were members of the Research Working Group of the Queensland Government Marine Stinger Advisory Group Committee.
- Lyndon Llewellyn was appointed as the Australian member of the International Oceanographic Commission Intergovernmental Panel on Harmful Algal Blooms.

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**Appendices** 



- AIMS Associate, Dr Terry Done was the Chair of the Scientific Program Sub-Committee for the 12<sup>th</sup> International Coral Reef Symposium to be held in Cairns in July 2012.
- Or Terry Done was also one of the three Australian representatives t the Scientific Committee on Oceanic Research, a permanent non-governmental organisation formed by the International Council for Science with a focus on promoting international cooperation in planning and conducting oceanographic research, and solving methodological and conceptual problems that hinder research.
- AIMS climate and water quality staff join other regional researchers at the GBRMPA's pre-summer reef health scientific workshop (Sep 10).
- O The AIMS Research Director, Dr Peter Doherty, was appointed as the Science Leader for the Tropical Ecosystems Hub with the National Environmental Research program.

### **Submissions**

- Ross Jones and Jamie Oliver made a submission on behalf of AIMS to the Review of the National Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances (the National Plan) and the National Maritime Emergency Response Arrangements (NMERA) announced by The Hon Anthony Albanese MP Minister for Infrastructure and Transport on 1 February 2011 and as outlined on the Australian Maritime Safety Authority (AMSA) website.
- Ross Jones and Jamie Oliver made a submission on behalf of AIMS to the Draft Government Response to the Report of the Montara Commission of Inquiry released on 24 November 2010.
- O Response to the National Broadband Network Inquiry, February 2011.
- A submission to the NeCTAR Discussion paper developed and submitted on behalf of AIMS.
- O Submission to "Strategic directions for development of the Queensland bio-based industrial products sector".

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Name	Affiliation	Торіс
Chris Langdon	Rosenstiel School of Marine and Atmospheric Sciences University of Miami	Affects of acidified seawater on calcification in corals
Ruth Böttger-Schnack	Biological Oceanography Leibniz-Institute for Marine Sciences	Improving the taxonomy of copepods in key coral reef ecosystems
Professor Louis J. Guillette Jr	Medical University of South Carolina	Impacts of endocrine disruptors on aquatic wildlife
Emeritus Professor Tsutomu Ikeda	Hokkaido University, Japan	Database of zooplankton metabolism of the world oceans, collect data
Professor Sukristijono Sukardjo	Research Centre for Oceanography Indonesian Institute of Sciences	Complete review of mangroves of the South China Sea for the prestigious journal Oceanography and Marine Biology Annual Reviews

### **Visiting Scientist program**



### Glossary

### **Acronyms and Abbreviations**

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ACIAR	Australian Centre for International Agricultural Research
AIMS	Australian Institute of Marine Science
AIMS Act	Australian Institute of Marine Science Act 1972
ANAO	Australian National Audit Office
ANU	Australian National University
APA	Annual Performance Agreement
ARC	Australian Research Council
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	Commonwealth Authorities and Companies Act 1997
CDU	Charles Darwin University
CERF	Commonwealth Environment Research Facilities Program
COAG	Council of Australian Governments
CoML	Census of Marine Life
CE0	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

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FAusIMM	Fellow of Australasian Institute of Mining and Metallurgy
FOI Act	Freedom of Information Act 1982
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	Occupational Health and Safety (Commonwealth Employment) Act 1991
OPSAG	Oceans Policy Science Advisory Group
OCIP	Oueensland Cyber-Infrastructure Foundation
ODPI&F	Queensland Department of Primary Industries and Fisheries
OEPA	Oueensland Environmental Protection Agency
OM	Oueensland Museum
R&D	Research and development
RRRC	Reef and Rainforest Research Centre Limited
RV	Research vessel
RWOPP	Reef Water Ouality Protection Plan
SEG	Scientific Experts Group on Climate Change
SRRP	Scott Reef Research Project
TAFF	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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