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AUSTRALIAN INSTITUTE
OF MARINE SCIENCE

Annual report 12-13

AIMS: Australia's tropical
marine research agency.





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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 AIMS on (07) 4753 4444, write to us at the Townsville address or email media@aims.gov.au.

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

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AUSTRALIAN INSTITUTE
OF MARINE SCIENCE

TOWNSVILLE | DARWIN | PERTH

01 October 2013

The Hon Ian Macfarlane MP
Minister for Industry
Parliament House
CANBERRA ACT 2600

Dear Minister

On behalf of the Council of the Australian Institute of Marine Science (AIMS), we have pleasure in presenting AIMS' 41st Annual Report for the year ended 30 June 2013. 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 AIMS' research output can make an informed judgment about AIMS' performance during the 2012-2013 financial year.

The report has been prepared in accordance with the *Commonwealth Authorities (Annual Reporting) Orders 2011* and the *Finance Minister's Orders for Financial Reporting (incorporating policy and guidance) - for reporting periods ending on or after 1 July 2012*. The Council endorsed the content of the AIMS Annual Report by a resolution on 01 October 2013.

Yours sincerely,

Mr Wayne Osborn
Chairman
Australian Institute of Marine Science

Mr John Gunn
Chief Executive Officer
Australian Institute of Marine Science

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Certification of Report of Operations

The Council of the Australian Institute of Marine Science (AIMS) is responsible under Section 9 of the *Commonwealth Authorities and Companies Act 1997* (CAC Act) for the preparation and content of AIMS' Report of Operations, in accordance with the Finance Minister's Orders.

Council endorsed the content of the Report of Operations by a resolution on 01 October 2013.

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Chairman
Australian Institute of Marine Science

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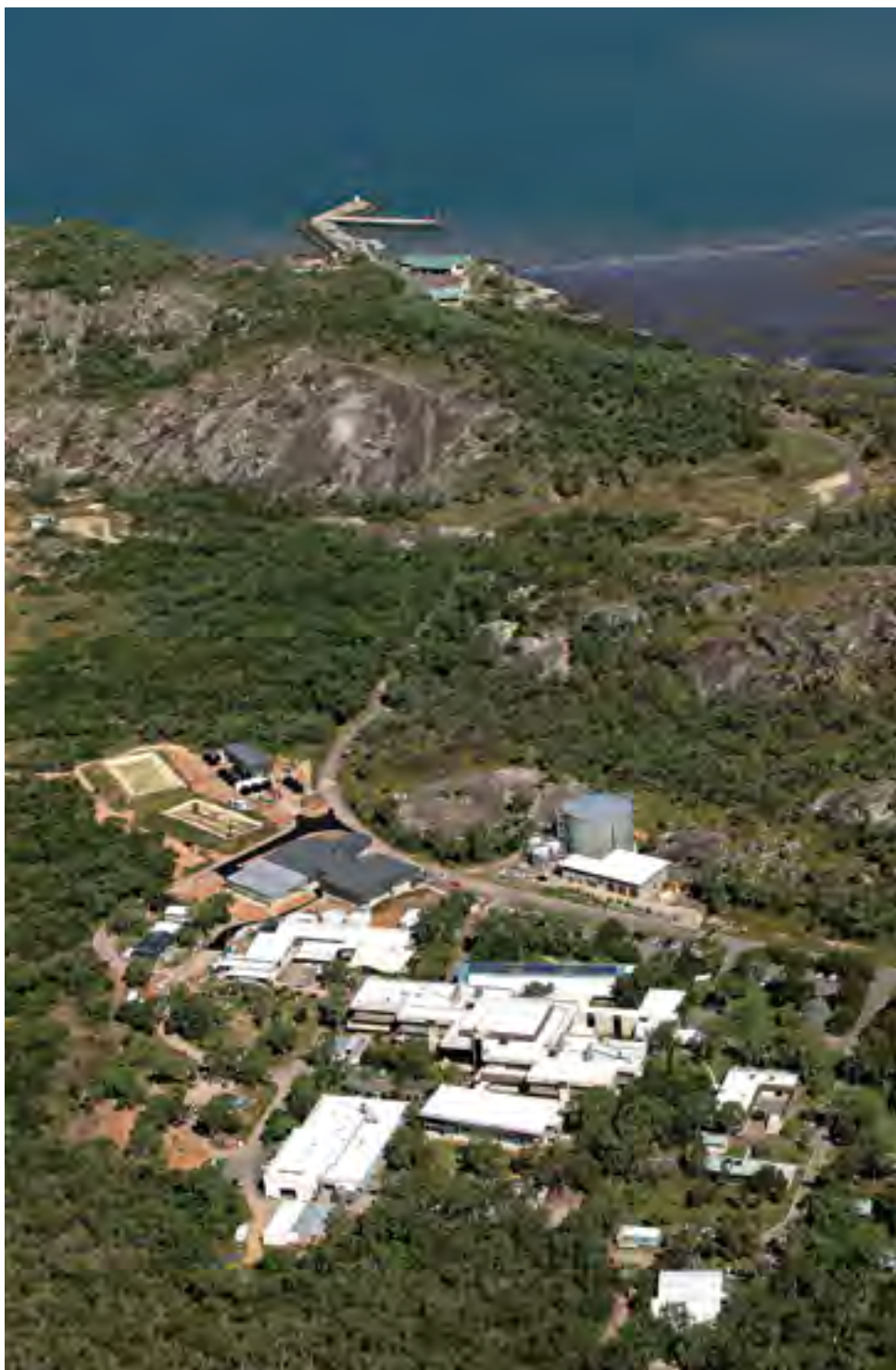
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AIMS Cape Ferguson. Image: Aerial Impressions.

ABOUT AIMS



The Australian Institute of Marine Science (AIMS), Australia's tropical marine research agency, is recognised internationally for its leadership in research into tropical marine environments and their living aquatic resources.

AIMS' mission is to generate and transfer knowledge to support the protection and sustainable use of the marine environment through innovative, world-class scientific and technological research.

AIMS:

- conducts strategic and applied research into marine life, from microbes to whole-of-ecosystems, and the processes that sustain them
- monitors condition and trends in health of the marine environment
- builds models and decision support tools to assist interpretation of the data collected
- develops a broad spectrum of enabling technologies, from molecular sciences to ocean technologies.

AIMS' research is targeted towards priorities of Commonwealth and State Governments and industry. Over the last year the Institute's research has continued to:

- underpin Australia's environmental management of the Great Barrier Reef (GBR) to ensure that this World Heritage Area remains healthy and resilient
- support the sustainable development of coastal industries and ports across northern Australia from Gladstone to the Pilbara
- provide the environmental baselines and condition and risk assessments required for development of the offshore oil and gas industry in North Western Australia.

To ensure that the outputs of its research are transferred to users and have the required impact, AIMS actively engages with Government (Ministers, policy makers, resource managers and environmental regulators), private industry sectors (ports, oil and gas, mining, tourism, services), non-government organisations, scientific peers and the Australian public.

AIMS was established in 1972 near Townsville, in recognition of the importance of the GBR to Australia. Today AIMS also operates from bases in Perth and Darwin to support our research across northern Australia, spanning two oceans and three regional seas.

Our people

AIMS employs more than 200 science and support staff. Many of AIMS' scientists are world authorities in their field who have achieved international acclaim for their research. Support staff provide specialised skills in data management, information technology, engineering, field operations, information services, science communication and corporate services.

AIMS maintains a strong educational program, particularly through co-funded postdoctoral positions and PhD scholarships as part of joint ventures with James Cook University (JCU), Charles Darwin University (CDU) and The Australian National University (ANU), through the North Australia Marine Research Alliance (NAMRA), and with CSIRO and the University of Western Australia (UWA).

In 2012-2013 AIMS supported 27 postdoctoral fellows and AIMS staff supervised 68 postgraduate students, drawn from universities throughout Australia and overseas, but predominantly those in Queensland, Western Australia and the Northern Territory.

AIMS' exemplary safety record has been achieved through an organisation-wide commitment to identifying and minimising risks associated with working in potentially hazardous environments. A robust, regularly audited, system of procedures is in place with emergency drills and scenario testing undertaken regularly.

Research facilities

AIMS' research activities are primarily focused on Australia's tropical marine environments from the southern end of the GBR on the east coast to Shark Bay and the Abrolhos Islands in the west. Field activities are supported by laboratory and administrative facilities located at Townsville, Darwin and Perth.

AIMS' headquarters at Cape Ferguson, about 50 km from Townsville, is close to the centre of the GBR and surrounded by national park and marine reserve. AIMS' Darwin facility is the Arafura Timor Research Facility (ATRF), a joint venture with ANU, located adjacent to the campus of CDU. In Western Australia, AIMS is co-located with the UWA Oceans Institute at the university's Crawley campus in Perth.

A recent injection of Australian Government infrastructure funding has helped AIMS to expand its research facilities at all three sites:

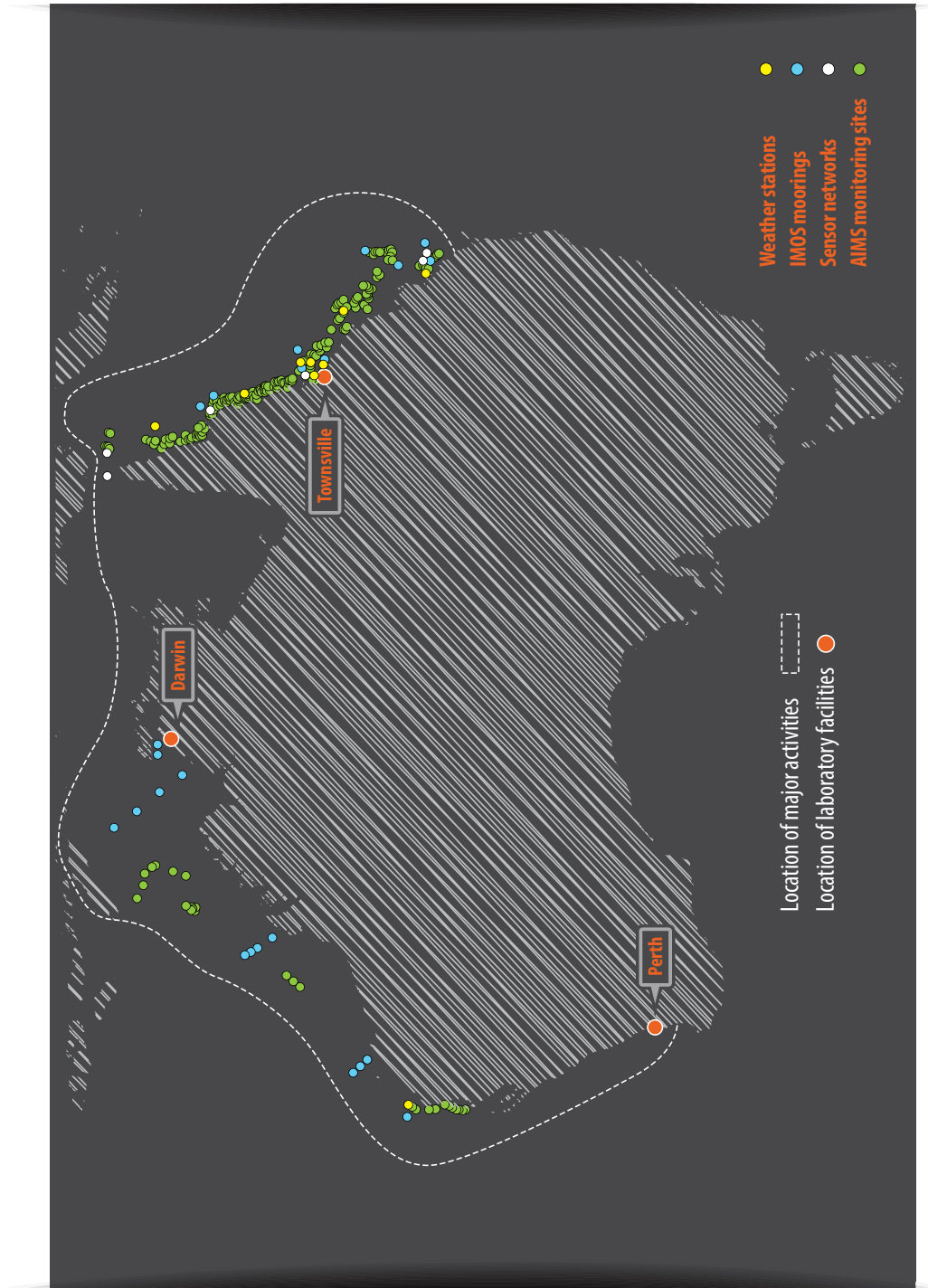
- AIMS at Cape Ferguson has seen the construction of the National Sea Simulator (SeaSim), along with new facilities to house AIMS' Tropical Marine Collections. New berthing facilities for AIMS' research vessels have recently been commissioned in Townsville.
- Enhanced facilities, including a new research aquarium building, at the ATRF will enable more joint research with AIMS' Northern Territory-based collaborators, under the banner of NAMRA.
- AIMS and CSIRO are partnering with UWA in the development of the Indian Ocean Marine Research Centre (IOMRC) on the UWA campus.

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 Research Vessel (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 which are essential for long research trips, such as:

- on-board dive compressors
- a recompression chamber on the RV *Solander*
- A-frame, hydrographic and connectivity, temperature and depth winches
- wet and dry laboratories
- flow-through aquaria
- large deck spaces
- inflatable tenders
- sophisticated navigation, satellite communication and computing facilities.

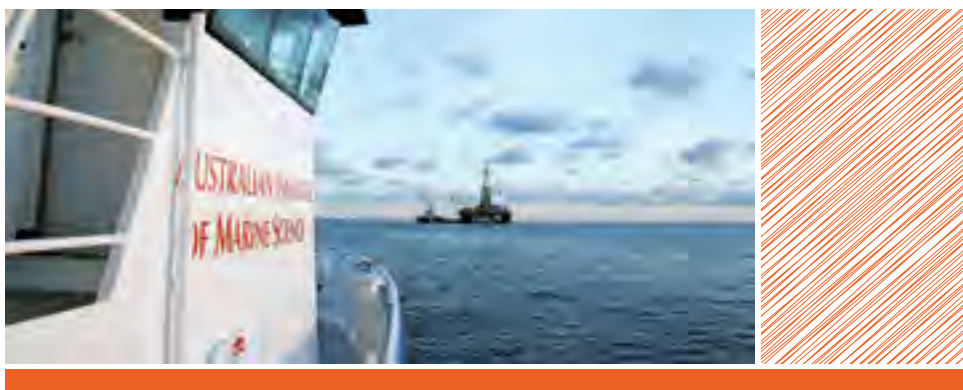
Location of major activities and facilities





AIMS researcher monitoring the reef. Image: Jürgen Freund

YEAR IN REVIEW: REPORT FROM CHAIR AND CEO



Australia administers the third largest marine jurisdiction in the world—nearly double the area of its continental land mass. To manage this substantial asset effectively and sustainably demands knowledge and understanding of the marine environment. In tropical Australia, acquiring necessary information is the role of the Australian Institute of Marine Science (AIMS).

With the expansion of current industries and development of new opportunities, it is estimated that Australia's ocean estate will contribute around \$100 billion to the national economy by 2025¹.

Most of Australia's valuable commodities travel to market by sea. Its huge offshore oil and gas reserves provide the nation with a valuable export commodity and importantly, a long term source of energy. Ocean waves and tides also provide a renewable source of energy and the sea provides food and opportunities for recreation for the 85% of Australia's population that lives on the continent's coastal fringe. In addition, the marine ecosystem also performs critical environmental services such as climate regulation and nutrient cycling. Thus, Australia's oceans are vitally important to its economy, society and environment.

AIMS' mission is to generate the marine science needed to meet the grand challenges of managing Australia's ocean estate, and it does this well. As this Annual Report illustrates, AIMS is noted worldwide for its scientific excellence. The research it undertakes is outcomes-orientated. AIMS concentrates on science that has an impact, particularly science which informs the conservation and sustainable development of Australia's coastline and surrounding oceans.

In the past year, this mission has focused on three broad programs: maintaining the health and resilience of the Great Barrier Reef (GBR); supporting the oil and gas industry in its efforts to develop a world-class offshore enterprise with environmental sensitivity; and advising those involved in the rapid coastal development of northern Australia on the potential for detrimental impacts on inshore environments and how to minimise them.

Last October, researchers from AIMS published a study in the prestigious US journal, *Proceedings of the National Academy of Science*, showing that the GBR had lost about half its coral cover in the past 27 years (see Highlights, page 13). The research found the main culprits were cyclone damage (responsible for 48% of the loss), crown-of-thorns starfish (42%), and bleaching (10%). That research was based on sustained investment (totalling in the order of \$50 million) in a long-term monitoring program to assess the Reef's health. This kind of investment is essential if we are to understand the impacts of both natural and human pressures, but also to determine the effectiveness of various

measures being taken by Governments to protect the World Heritage Area. The investment and quality of this work is recognised globally as a definitive baseline document of coral decline and its causes.

For Australia, this research is even more important. It indicates that the condition of the GBR—previously described as being “at the cross roads”²—is now in serious decline and in need of urgent attention. However, the news is not all bad. The monitoring program, in providing us with the causes of the problem, has opened a way to the future. It shows that, if the crown-of-thorns starfish were controlled, coral cover would increase at 0.89% per year, despite losses due to cyclones and bleaching. The starfish is an issue we can do something about now, so over the next few years AIMS will be focusing significant attention on science aimed at providing solutions to the problem.

Through its long-term monitoring programs, AIMS has established itself as a trusted and authoritative advisor on reef health, and in that capacity was able to assist the Australian and Queensland Governments with their response to the World Heritage Area assessment conducted by the United Nations Educational, Scientific and Cultural Organisation (UNESCO). AIMS also works very closely with the Great Barrier Reef Marine Park Authority through provision of data, information and advice.

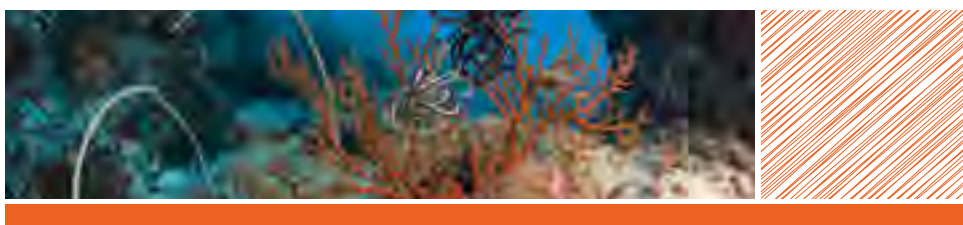
With respect to oil and gas, it is another measure of the high regard in which AIMS is held that it was invited by research and development partners—including Shell Australia, the INPEX Corporation, CSIRO, Curtin University, The University of Western Australia and Western Australia’s ChemCentre—to lead a consortium undertaking a \$15 million scientific monitoring program associated with development of liquefied natural gas resources in the Browse Basin, about 500 km north of Broome. The consortium is responsible for baseline, risk management and ongoing monitoring studies. In addition, AIMS continues to work with a number of industry partners to support their environmental strategies. Of particular interest this year has been AIMS’ ongoing work with PTTEP Australasia to assess the long-term impact of the 2009 Montara oil spill on coral reefs and seafloor communities in the Timor Sea.

With the development of oil and gas, and the expansion of the iron ore industry in Western Australia, the coal industry in Queensland, and naval and export facilities in Darwin Harbour, AIMS has become an important source of advice on sustainable port development. It monitors the impact on inshore environments of current and future human activity, and actively seeks to identify solutions for industry and government. For instance, AIMS heads a \$9-million research program on the environmental risks of dredging to be undertaken as part of the development of the export oil and gas industry and the iron ore industry in north-western Australia. It is also working with research and government partners to support more than \$34 billion of development activities in Darwin Harbour that will position that city as Australia’s northern export hub and provide a marine supply base to service Australian and allied forces. In Queensland, AIMS is a member of the Gladstone Healthy Harbour Science Panel.

All of these research programs, from examining the life cycle of, and finding control measures for, the crown-of-thorns starfish to the impact of dredging and water quality on coastal environments, will benefit from AIMS’ new National Sea Simulator (SeaSim) facility, the world’s smartest aquarium (see Highlights, page 18). SeaSim combines the best aquarium equipment with the latest industrial control technology to mimic ocean conditions. It is already demonstrating its value in supporting a wide range of experiments on the impacts of ocean warming, acidification and dredging on tropical ecosystems.

AIMS’ national contributions—through its excellent science and, importantly, its commitment to working with stakeholders to ensure that this science is applied to their highest priority needs—were recognised by the Australian Government in the 2013 budget when the Institute received a modest increase in its base funding. In a tight fiscal environment, this provides AIMS with renewed capability to play a central role in the sustainable development of marine industries across northern Australia, and in neighbouring states for whom marine resources are critical for food security and national prosperity.

SNAPSHOT OF THE YEAR



Research undertaken by the Australian Institute of Marine Science (AIMS) provides vital information for many aspects of management of the marine environment, such as controlling the crown-of-thorns starfish on the Great Barrier Reef (GBR) and essential monitoring of ocean and coastal water quality in Australia's tropics. Through activities such as conducting surveys that collect baseline data prior to any environmental impacts, and leading the comprehensive scientific monitoring programs for petroleum extraction companies, AIMS is playing an instrumental role in improving the future management of Australia's coasts and oceans. The construction of the new National Sea Simulator (SeaSim) at Cape Ferguson and the continued maintenance and operation of elements of Australia's Integrated Marine Observing System (IMOS) have strengthened AIMS' research capabilities in 2012-2013.

AIMS has supported management of Australia's tropical coasts and oceans by:

- leading a consortium of research agencies and universities in Western Australia to develop and implement a comprehensive Operational and Scientific Monitoring Program (OSMP) for Shell and INPEX as they develop the offshore petroleum and gas resources of the Browse Basin, 500 km north of Broome
- conducting long-term monitoring programs of coral reefs which, among other things, have confirmed a serious loss of coral cover on the GBR and determined its causes; documented the impact of the 2009 Montara oil spill; and demonstrated significant regrowth of coral reefs in Western Australia that were 80% depleted by ocean warming in 1998
- contributing water quality research to the Australian Government's Reef Rescue initiative, the Queensland Reef Regulations, and the Paddock-to-Reef Monitoring, Modelling and Reporting Program
- using IMOS and other monitoring infrastructure to establish an ongoing program of important ocean observations for the development of Darwin Harbour, the Timor Sea, the North West Shelf and other important and sensitive regions of Australia's tropical oceans.

Despite working in inherently hazardous environments—from research vessels in the open ocean to small boats over coral reefs on activities ranging from operating high technology sampling equipment to diving offshore—AIMS has one of the best safety records of the government agencies conducting field activities. In the past year there has been no time lost due to injury, and AIMS has the sixth lowest insurance premium of any government agency.

Scientific achievements

In 2012, AIMS researchers published a record number of papers and reports, including 203 journal articles, as well as high-level analytical publications that assist government policy. Highlights among this work include:

- an analysis of the long-term monitoring program of the health of the GBR, which showed that it had lost nearly half its coral cover over the past 27 years. The three major causes of disturbance were storm damage (48%), crown-of-thorns starfish (COTS) (42%) and bleaching (10%). The work has been constantly quoted worldwide since its release

- studies on the natural carbon dioxide seeps of Papua New Guinea which demonstrate the impact of increasing levels of carbon dioxide in the ocean. The researchers found that the resultant acidification could lead to the extinction of an entire class of marine organisms, the Foraminifera, by 2100. This research is delivering critical new insights into how the coral reefs of the world will respond to a high carbon dioxide world, and resulted in a paper in the prestigious journal, *Nature Climate Change*
- analyses of long-term data from the lagoon between the GBR and the coast which shows that water quality is driven mainly by seasonal processes, such as river-floods and strong winds. This work is important to the assessment and management of any potential agricultural and industrial runoff or disturbance
- a study which overturned conventional theory by demonstrating that isolated coral reefs can recover from catastrophic damage as effectively as those with undisturbed neighbours. The work could completely change management responses to coral bleaching events
- aquaculture research showing that a combination of two different bacteria can provide effective protection against a bacterium that kills the larvae of the potentially economically important ornate spiny lobster
- research which demonstrated that well-regulated ecotourism does not affect whale sharks at Ningaloo Reef.

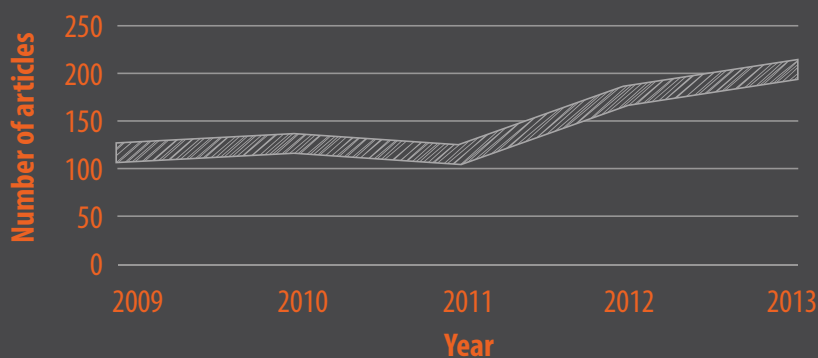
Other achievements and impacts

AIMS contributed to marine research and management in many other ways both in Australia and worldwide. These included:

- completing construction of the world's smartest aquarium system, the SeaSim at Cape Ferguson. This combines the best aquarium infrastructure with the latest industrial control technology into a facility which can mimic a wide range of ocean conditions. Initially, SeaSim is being used to study the life cycle and habits of the reef-threatening crown-of-thorns starfish
- providing information to brief the World Heritage Committee delegation during its visit to Australia to investigate concerns over the health of the GBR
- playing a key role in informing national policy issues, such as the Strategic Assessment of the GBR and the Gladstone Harbour Science Review. AIMS also sits on the Government's Threatened Species Committee where it leads the work on sharks, COTS and reef rescue planning
- leading the Oceans Policy Science Advisory Group in putting together an important policy document on the future management of the nation's ocean estate, entitled *Marine Nation 2025*
- conducting and supporting seven of the major research projects and activities across tropical Australia for three of the five National Environmental Research Program hubs—the Northern Australia Hub, the Tropical Ecosystems Hub, and the Marine Biodiversity Hub
- chairing the Global Ocean Observing System Steering Committee
- jointly leading with the Great Barrier Reef Marine Park Authority an international workshop on the resilience of coral reefs held on Fitzroy Island in July 2012
- supporting, and being a major contributor to, the 12th International Coral Reef Symposium held in Cairns in July 2012
- contributing to the construction and opening of the upgraded Arafura Timor Research Facility in Darwin in May 2013
- collaborating with more than 100 overseas researchers from about 80 organisations to undertake projects in about 30 countries
- supporting the research of 27 postdoctoral fellows
- supporting the studies of 68 postgraduate students, including 42 based at external institutions
- supporting 13 occupational trainees to learn technical and laboratory skills
- completing 98% of AIMS' external contract milestones on time.

Science publications

AIMS continued its recent growth in scientific publications, with a record number of peer-reviewed scientific articles, and total publications, in 2012.



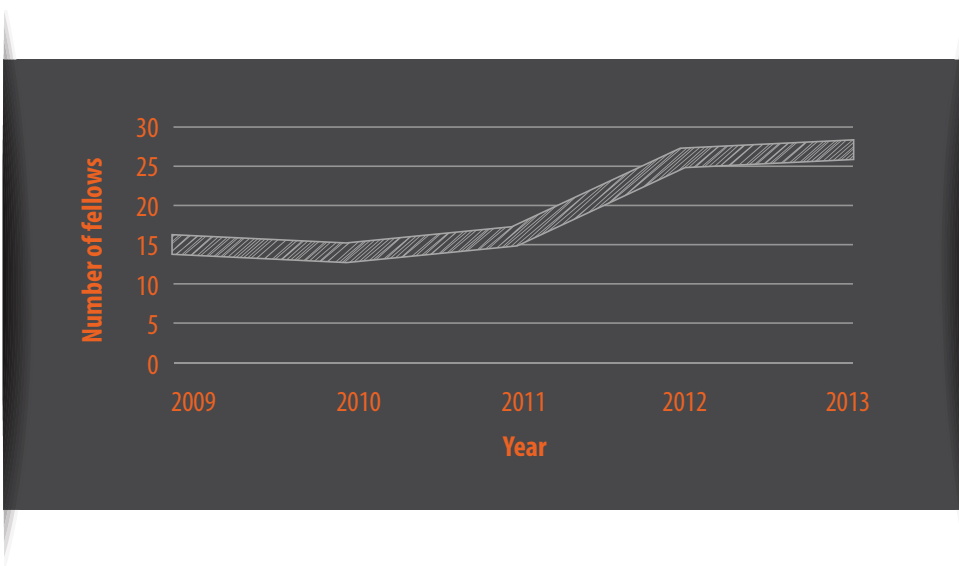
Collaborations

AIMS scientists participated in an increased number of collaborative projects with Australian and international scientists.



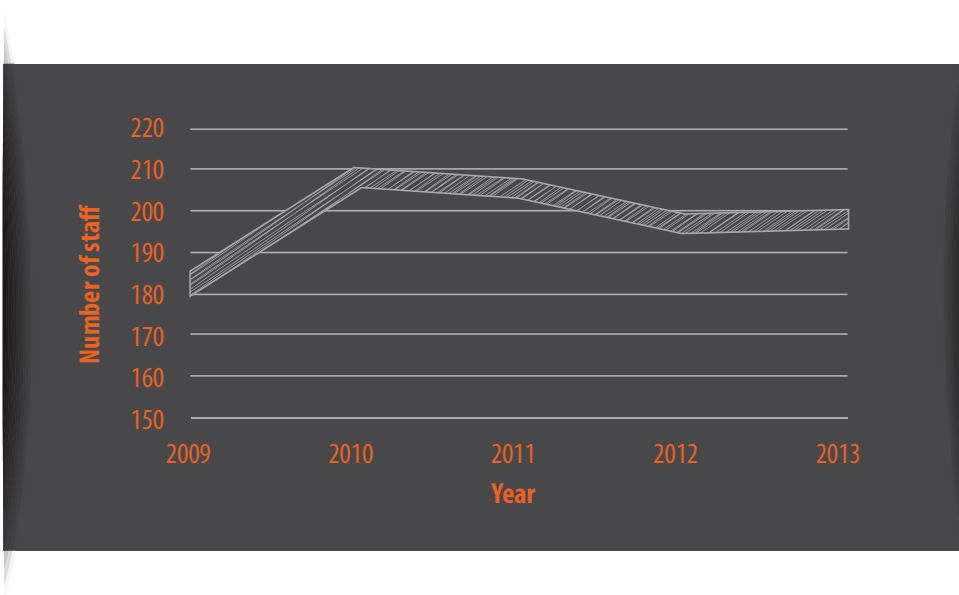
Postdoctoral researchers

AIMS has enhanced its research capacity with increasing numbers of postdoctoral scientists.



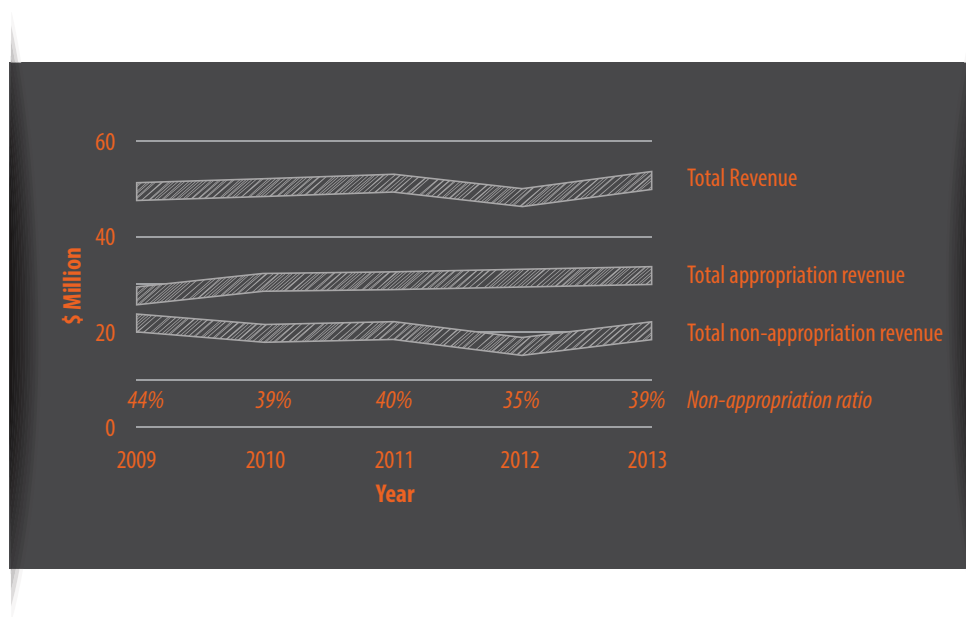
Staff numbers

The number of individual staff employed by AIMS increased from last year, but there was a slight drop in terms of full time equivalent employees.



Revenue

AIMS' total revenue grew in 2012-2013 compared to the previous year, largely due to growth in external funding.





AIMS is committed to an extremely high level of safety for all staff members in all operational environments. Image: J. Eu

HIGHLIGHTS



Half the Great Barrier Reef's coral cover lost in the past 27 years

The outcomes of the AIMS Long-term monitoring provide crucial inputs to effective, evidence-based management of the GBR World Heritage Area

The Great Barrier Reef (GBR) lost half its coral cover over the past 27 years, according to a study published in the *Proceedings of the National Academy of Sciences* in October 2012 by researchers from AIMS and the University of Wollongong. The three main causes of large scale, severe disturbance on the GBR were storm damage, crown-of-thorns starfish (*Acanthaster planci*), and bleaching. Of the damage caused by these major factors, storm damage had the greatest impact (responsible for 48% of the loss), followed by the starfish (42%), and bleaching (10%).

The findings were based on the most comprehensive reef monitoring program in the world. "The program started broad scale surveillance of more than 100 reefs in 1985, and from 1993 it has incorporated more detailed annual surveys of 47 reefs," said one of its originators, Dr Peter Doherty, a senior scientist at AIMS.

"AIMS has invested in the order of \$50 million in this monitoring program and our researchers have spent more than 2,700 days at sea," Dr Doherty said.

If the trend shown in the study continues, Dr Doherty said, coral cover could halve again by 2022—but the effect isn't uniform. "Interestingly, the pattern of decline varies among regions. Coral cover has remained relatively stable in the northern reef, whereas we see dramatic loss of coral in the southern regions, where storms have devastated many reefs over the past decade."

The study clearly shows that three factors are overwhelmingly responsible for the loss of coral cover: intense tropical cyclones have caused massive damage, primarily to central and southern reefs; population explosions of the predatory crown-of-thorns starfish have affected coral populations throughout; and two severe coral bleaching events also have caused major damage in northern and central parts.

“Our data show that the reefs can regain their coral cover after such disturbances, but recovery takes between 10 and 20 years. At present, the intervals between the disturbances are typically too short for full recovery and that’s causing the long-term losses,” said Dr Hugh Sweatman, one of the study’s authors.

“We can’t stop the storms, and ocean warming (the primary cause of coral bleaching) is one of the critical impacts of the global climate change,” said AIMS CEO, John Gunn. “We can, however, act to reduce the impact of the crown-of-thorns starfish. This study shows that without the crown-of-thorns, coral cover would increase at 0.89% per year. So, even with losses due to cyclones and bleaching there should be slow recovery.

“We at AIMS will be redoubling our efforts to understand the life cycle of crown-of-thorns starfish so we can better predict and reduce periodic population explosions. It’s already clear that one important factor is water quality, and we plan to explore options for more direct intervention against this native pest.”

Human activities in the GBR’s catchment influence other environmental factors, such as water quality, that weren’t measured in the study, but which in turn affect crown-of-thorn starfish numbers or coral cover directly. Other activities, such as tourism and coastal development, cause local coral damage, albeit on a minor scale compared with the large scale acute disturbances in this study.

The analysis presented in the paper was conducted with support from the Australian Government’s National Environmental Research Program (NERP).



AIMS researchers are investigating the impact of CO₂ using “natural laboratories” in Papua New Guinea. Image: K. Fabricius

Early victims of ocean acidification could become extinct this century

AIMS is studying natural carbon dioxide gas seeps in PNG to gain insights into a future high-CO₂ world

The AIMS Papua New Guinea (PNG) CO₂ seeps project in Milne Bay Province provides a unique natural laboratory for research into ocean acidification.

By studying naturally-occurring CO₂ seeps, scientists are able to analyse the effects of ocean acidification on coral ecosystems, giving an insight into what could occur in the marine environment worldwide in the future. The PNG CO₂ seeps project gives scientists valuable insights into what tropical coral reefs and seagrass meadows could look like if human-induced atmospheric CO₂ concentrations continue to rise much beyond the present level.

Ocean acidification occurs when CO₂ mixes with water, lowering the pH of the water (making it a little more acidic). Laboratory experiments have shown that even small changes in the level of acidity in the oceans can have detrimental effects on the growth, survival and reproduction of many marine organisms. The PNG CO₂ seeps project has resulted in new collaborations with national and international research organisations, and eight completed publications in high impact journals, as well as membership of the United Nations Convention on Biodiversity Ocean Acidification Expert Committee.

Dr Fabricius said the project has showed that ocean acidification leads to profound changes in coral reef ecosystems.

“The decline of the structurally complex corals means the reef will be much simpler and there will be less habitat for the hundreds of thousands of species living in coral reefs.”

In particular, the project has shown the effects on algae and seagrasses from the extra CO₂ in the ocean. Both algae and seagrasses benefit from the extra CO₂ in the water, but an increase in algae is to the detriment of corals. Many corals, soft corals and sponges are also directly affected by the high CO₂, and coral reefs cease to exist at a pH below 7.8. Recent research by AIMS scientists has also shown worryingly, that increasing ocean acidification could lead to the extinction of an entire class of marine organisms by 2100.

“The Foraminifera—or forams—are much like an amoeba with a shell,” explained Dr Sven Uthicke, the lead author of the study which was published in May in Nature Publishing Group’s online scientific journal, *Scientific Reports*. “As CO₂ levels increase, our oceans will become more acidic, making it more difficult for these small marine creatures to extract the calcium from seawater to form the shells they need to survive.

“These simple organisms are particularly vulnerable to increasing ocean acidification as they lack the complexity and energy reserves of other exoskeleton-dependent marine creatures, such as corals and sea urchins.

“We conducted a study in Papua New Guinea, where subsurface volcanic activity causes naturally-occurring CO₂ to bubble continuously up from the seabed.

Dr Uthicke said “More than 500 metres away from these seeps, we found healthy and diverse foram communities—similar to those you would find on the Great Barrier Reef. However, closer to the seeps, where CO₂ concentrations were higher and the water was more acidic, it was a very different picture.

“Disturbingly, the number and diversity of forams was significantly lower. Also we saw foram shells that had been corroded or ‘pitted’ by the acidic environment.

“Of most concern, we found no Foraminifera species at all in locations where acidification had reached the level our oceans are predicted to reach by 2100, in all but the most optimistic emissions scenario.”

The results echo the mass extinctions of marine organisms that occurred millions of years ago, when the Earth experienced significant increases in CO₂, temperature or both. Although some forams survived those past events, the current rate of CO₂ increase is much faster than anything seen before.

“In previous studies at these seeps we found similar, if less dramatic, results with other organisms, such as corals,” said Dr Katharina Fabricius, a co-author of the study. “Many coral species could not grow in the increasingly acidic conditions”.

In the grand scheme of things, the small and simple nature of forams might make them seem fairly unimportant compared to, say, corals.

“Foram shells, however, account for up to 40% of the composition of some cays and sandy sea beds of coral reefs—and these habitats are home to a significant number of coral reef species such as seabirds and turtles.

“The long-term implications of any disappearance of forams from the reef are not certain and will require further investigation, but these findings do add to concerns about the resilience of coral reefs if ocean acidification progresses as predicted under current CO₂ emission scenarios.”

Great Barrier Reef water quality linked to floods, cyclones and human activity

The AIMS water quality monitoring program is documenting the response of coastal communities to changes in catchment practices

Long-term data show that water quality in the lagoon between the GBR and the coast is driven mainly by seasonal processes such as river-floods and strong winds. That’s the major conclusion from two independent studies drawing on more than 20 years of data collected by the Water Quality and Ecosystem Health research team at AIMS.

“Water quality on the Great Barrier Reef is critically important for a healthy ecosystem,” said research team leader, Dr Britta Schaffelke. “When water quality deteriorates, we see deterioration of important habitats such as coral reefs and seagrass beds, and these are home to many species of reef fish, crustaceans and marine mammals.

“Our analyses show that water quality in the lagoon dropped significantly during the late 1990s and early 2000s, a period that coincided with very high rates of vegetation clearing on land adjacent to rivers. It also included three major river floods. This is the first direct evidence that catchment activity affects marine water quality.”

The Water Quality and Ecosystem Health research team has the longest available dataset on water quality for the GBR (1989-2010). Dr Schaffelke and her team correlated changes in water quality with marked weather events and human activity in adjacent catchments.

In 2012–2013, the team was able to show conclusively how floods affect water clarity in the GBR lagoon, using two independent approaches.

The first study was undertaken in collaboration with the Reef Plan Marine Monitoring Program, which maintains a network of sensors recording water turbidity (the level of cloudiness due to suspended particles) up and down the GBR. Researchers led by Dr Katharina Fabricius showed that river flow and rainfall significantly influenced inshore turbidity. Water clarity can decrease by a factor of ten on inshore reefs close to river mouths. On these reefs, water clarity was 43% lower at the end of the wet season than at the beginning, but slowly increased towards the end of the dry season.

In the second study, in collaboration with The University of Queensland (UQ) and James Cook University (JCU), scientists analysed a ten-year time series (2002–2012) of daily satellite data for the central GBR. They found that water clarity, and the levels of particulate phosphorous, were strongly related to the volume of discharge from the large Burdekin River.

Each year, water clarity (standardised for waves and tides) rapidly declined with the onset of the river floods. This effect was most obvious for the central shelf waters that showed reduced water clarity for about five months each year. The zone closest to the coast remained turbid throughout the year. River runoff did not affect water clarity in the offshore zone.

Importantly, both studies showed that GBR lagoon water clarity returns to normal levels four to seven months after river floods, indicating cleansing mechanisms of sediment export and storage at work. The research therefore suggested that reducing the amount of nutrients and sediments carried by coastal rivers should measurably improve the water clarity of the GBR across a broad swath of the continental shelf—and this would provide significant ecosystem benefits.

Remote reefs can be tougher than they look

AIMS is surveying remote areas of the north-west continental shelf to describe patterns of biodiversity as they change over time

Isolated coral reefs can recover from catastrophic damage as effectively as those with undisturbed neighbours, a long-term study by marine biologists from AIMS and the ARC Centre of Excellence for Coral Reef Studies (CoECRS) has shown.

Scott Reef, a remote coral system in the Indian Ocean, has largely recovered from a catastrophic mass bleaching event in 1998, according to the study published in the journal *Science* in April.

The study challenged the conventional wisdom that isolated reefs recover from disturbance more slowly because their distance from neighbouring, undamaged reefs reduces the chances of recolonisation by coral larvae. Instead, the scientists found that the isolation of Scott Reef allowed surviving corals to grow rapidly and propagate in the absence of human interference.

The work has also spawned a comprehensive, beautifully illustrated book on 20 years of research entitled *Discovering Scott Reef*³.

3 <http://www.aims.gov.au/publications/discovering-scott-reef>

Scott Reef, Australia's largest oceanic reef system, is remote and isolated, sitting out in the Indian Ocean some 250 km from the coastline of northern Western Australia. Prospects for the reef looked gloomy in 1998, when it suffered from a catastrophic mass bleaching and lost about 80% of its coral cover. The study shows it took just 12 years to recover.

Spanning 15 years, data collected and analysed by the researchers shows how after the mass bleaching the few remaining corals provided low numbers of recruits (new corals) for the reef. On that basis, recovery was projected to take decades, yet within 12 years the cover and diversity of corals had recovered to levels similar to those seen pre-bleaching.

"The initial projections for Scott Reef were not optimistic," said Dr James Gilmour from AIMS, the lead author on the publication, "because, unlike reefs on the Great Barrier Reef, there were few if any reefs nearby capable of supplying new recruits to replenish the lost corals."

The few corals that did settle at Scott Reef, however, had excellent rates of survival and growth, whereas on many nearshore reefs high levels of algae and sediment, and poor water quality, will often suppress recolonisation.

"We know from other studies that the resilience of reefs can be improved by addressing human pressures such as water quality and overfishing," says Dr Gilmour. "So it is likely that a key factor in the rapid recovery at Scott Reef was the high water clarity and quality in this remote, offshore location."

Dr Andrew Heyward, Principal Research Scientist at AIMS, highlighted another conclusion from their findings. "Previously we've tended to assume proximity to other reefs was a key attribute when estimating the resilience of a reef following a major disturbance. But our data suggests that, given the right conditions, reefs might do much of the recovery by themselves." This finding could have implications for the management of marine protected areas.

The highly detailed, long-term data set makes Scott Reef the best studied reef in Australia's Indian Ocean territory. The study provides valuable new perspectives on ecosystem function and resilience of coral reefs situated in the northwest Australia, and in other contexts such as the GBR, and illustrates the importance of AIMS' research collaborations with its industry partners.

World class aquarium facilities to test how climate change will affect Great Barrier Reef corals

AIMS is delivering new infrastructure capacity within the Tropical Marine Research Facilities Project

SeaSim is a research aquarium that can get closer to replicating the conditions of open ocean, reef lagoon or flooding rivers, than any other facility in the world.

"It's awesome," says AIMS marine researcher Mike Hall. "When we started planning SeaSim we visited more than 40 marine aquariums around the world to identify key attributes of the perfect research facility. What we've built takes the best in the world and adds new technologies and an incredible level of automation and control."

"In each tank we can automatically control many parameters—from water temperature to ocean acidification to salinity to lighting to nutrients and water quality."

“SeaSim will allow marine scientists the world over to test observations, assumptions and models. It will allow the development of technologies to assist aquaculture and fisheries management.”

Other studies planned for SeaSim include research into the crown-of-thorns starfish to find out why its populations boom periodically and to develop technologies to control them; work to determine how climate change will affect the interactions of corals with bacteria and viruses; and investigations of the impact of dredging activity on coral reefs.

Experiments reveal the interactive effects of increased temperature and ocean acidification on Great Barrier Reef corals

Marine scientists from AIMS are using the world’s smartest aquarium to study how future environmental conditions will affect the health of GBR corals.

AIMS-based ARC SuperScience Fellows Dr Neal Cantin, Dr Julia Strahl, Dr Paulina Kaniewska, in collaboration with Dr Line Bay, carried out a large scale a six-month experiment to measure how temperature and ocean acidification affect the health of corals in terms of their calcification rate, physiology and symbiosis. This study was an integral project during the prototype development of the SeaSim facility.

Rising CO₂ concentrations in the atmosphere are causing both ocean acidification and warming; increasing the frequency of coral bleaching events and making it more difficult for corals to form their reef-building skeletons. “Understanding the future of coral reefs require sophisticated experimental designs that explore the interactive effects of temperature and acidification on coral health as the corals recover from bleaching stress”, project leader Dr Cantin explains.

Two species, the sensitive branching coral *Pocillopora damicornis* and the tolerant massive *Porites*, were grown for six months under four different temperature and CO₂ combinations that represented pre-industrial, present day and future conditions projected by the end of this century.

Results found that temperature stress 1-2°C above present day, caused consistent bleaching and mortality. The good news is that calcification rates were only reduced under extreme ocean acidification conditions (900ppm). The team is further exploring the interactive effects of temperature and acidification on coral resilience using a wide range of measures of growth, calcification, tissue energetics, algal symbiosis, physiological, molecular and biochemical markers.

Experimental studies of this scale will help AIMS scientists to provide better recommendations for the management of the GBR.



Ocean temperature increases of more than 1°C over current levels will harm healthy corals and precious ecosystems. Image: Jürgen Freund

Report outlines challenges and opportunities of our ocean estate

The annual contribution of Australia's marine territories to the nation's economy could more than double to about \$100 billion annually by 2025, according to a report launched in March 2013 by the then Minister for Tertiary Education, Skills, Science and Research, the Hon Chris Bowen MP.

*Marine Nation 2025: Marine Science to Support Australia's Blue Economy*⁴—prepared by the Government's Oceans Policy Science Advisory Group—highlights the enormous potential of Australia's oceans, as well as the challenges and opportunities involved with managing its vast maritime resources.

The report outlines six major interconnected challenges facing Australia's marine environment: sovereignty, national security and natural hazards; energy security; food security; biodiversity and ecosystem conservation; climate change; and resource allocation.

To meet these challenges, *Marine Nation 2025* calls for investment in observation, experimentation and modelling. "Infrastructure is required for all these steps in the science process," it says, "ranging from observing technologies, through platforms such as research vessels, sustained observing systems, and experimental infrastructure, to data management, storage, manipulation and visualisation technologies. A stable, sustained and predictable commitment to maintaining, updating and transforming this new infrastructure, and the human resources to run it, is critical to ensure the initial investment delivers long-term and sustainable benefits."

The report also calls for investment in human capability: training, skills development, and mechanisms and incentives for collaboration.

Investment in science communication is also recommended to highlight the relevance and need for marine science and the benefits gained from previous and ongoing investment in this element of the national innovation sector. This will improve the application and acceptance of science in policy, legislation and regulation.

Marine Nation 2025 provides a framework to start a national discussion on how Australia can better benefit from our oceans while preserving their health for future generations.

Sharks on the move

While some sharks remain attached to their home region—a local bay or reef—others travel large distances in short periods. That's what AIMS marine biologist Dr Michelle Heupel found in a study which made use of the listening stations that form part of the Australian Animal Tagging and Monitoring System facility of the Integrated Marine Observing System (IMOS).

Her research is revealing patterns of movement not reported previously for many of these species and suggests there is still much to learn about shark movements within the GBR region and beyond. The results will be used to help conserve and manage shark populations within Australia and determine how effective marine park zones are for these mobile animals.

The listening stations, or acoustic receivers, monitor the Australian coastal region to record the movement paths of fish species. In Queensland they include a series of stations based in bays such as Moreton Bay and Cleveland Bay as well as in the central and southern portions of the GBR.

4 http://www.aims.gov.au/documents/30301/550211/Marine+Nation+2025_web.pdf

Some of the movements detected have been extensive. Bull sharks tagged at reefs offshore from Townsville have been recorded as far south as Moreton Bay, a 1200 km swim, and they are expected to travel as far as Sydney Harbour before returning north.



AIMS shark tracking research is providing vital data for development of conservation and management plans. Image: AIMS LTMP

Winning combination of bacteria found to combat deadly marine pathogen

Research conducted at AIMS has delivered promising results in the fight against *Vibrio owensii*—a bacterium responsible for mass mortalities in the larvae of ornate spiny lobster (*Panulirus ornatus*) being reared in aquaculture systems.

Scientists from AIMS, together with colleagues from the University of New England, have found that a combination of two different, probiotic bacteria provides effective protection against the pathogen and can increase larval survival by as much as 80%.

The high commercial value of the ornate spiny lobster means it has the potential to be an important product of Australia's aquaculture industry. Captive rearing is difficult, however, because nutritional deficits and bacterial disease lead to low survival rates through the lobster's long larval phase.

The researchers isolated a large number of probiotic candidates from wild lobster larvae and their natural prey items, and from the lobster aquaculture system at AIMS in Townsville. After much testing they selected the two bacteria, PP05 and PP107, with which they are now working.

Ecotourism has no long-term impact on whale sharks

In a multi-year study, marine biologists from AIMS have found that well-regulated ecotourism does not affect whale sharks.

The research—conducted over five years at Ningaloo Reef off the West Australian coast 1,200 km north of Perth—demonstrated that whale sharks which frequently encounter tourists are just as likely to return to the reef as those that only interact with a few humans.

Whale shark ecotourism is a rapidly growing industry throughout the world. Conservationists argue that it can be a “win-win” business, in that it provides an alternative to harvesting sharks, and gives governments a strong economic incentive to protect a vulnerable species. There have been concerns, however, that tourists swimming with the sharks may have negative effects on the animals.

Between 1993 and 2011, the number of whale shark tourists at Ningaloo increased dramatically from 1,000 to 17,000, and today the industry generates around \$6 million for the region each winter. “Our research shows that the code of conduct used by the Western Australian Department of Environment and Conservation to protect whale sharks is very effective with no detectable impact of tourists on shark aggregation behaviour at Ningaloo across years,” says lead author Rob Sanzogni, who is based at The University of Western Australia (UWA) in Perth as well as AIMS.



A distinctive whale shark on Ningaloo Reef. Image: Wayne Osborn

Turbid coral reefs most vulnerable to seaweeds

Grazing by a diverse population of herbivorous fishes can prevent seaweed from taking over coral reefs—but this effect is limited by water clarity.

That's the conclusion of the first study of its kind on coral reefs, in which a group led by Alistair Cheal of AIMS, estimated the relative vulnerability of different regions of the GBR to encroaching seaweeds.

The replacement of diverse coral-dominated communities with lower diversity systems dominated by macroalgae (seaweeds) is one of the main threats to coral reefs worldwide. This shift often follows major disturbances and typically signals a decline in the resilience of the reef.

The AIMS study, using long-term datasets from the GBR, is pioneering work. Many other ecosystems face similar threats of degradation unless the factors that underpin their resilience can be effectively managed. The study was published in the international journal *Ecological Applications* in January.

The AIMS team applied the ecological theory that resilience is positively related to the diversity within and among groups of important organisms, in this case herbivorous fishes. The results suggested that reefs in clearer waters, predominantly in mid-shelf and outer shelf environments, are least vulnerable to seaweed encroachment and those in turbid inshore regions are most vulnerable.

AIMS displays its wares at international coral conference

With papers on topics ranging from what drives carbon dioxide to dissolve in water through the species of juvenile fishes found on Ningaloo Reef and waste disposal in small island nations to how marine protected areas impact on fishing, researchers from AIMS played a prominent role in the 12th International Coral Reef Symposium (ICRS 2012) held in Cairns from 9 to 13 July 2012.

AIMS itself was a major sponsor of the symposium, hosted by the Australian Research Council Centre of Excellence for Coral Reef Studies (ARC CoECRS).

The event attracted more than 2,000 delegates from 80 countries, who delivered over 1,500 presentations in 12 concurrent sessions. AIMS researchers contributed to nine of the mini-symposia at the conference and ARC Future Fellow Dr Madeleine van Oppen gave one of the plenary lectures, entitled *Can Old Corals Learn New Tricks?* Dr van Oppen leads the AIMS research program on the genetics and genomics of adaptation of corals to climate change.

In all, AIMS researchers and students presented 65 papers, and were involved in another 34 reporting on collaborative studies, as well as six poster presentations.

Corals use bacteria to make their own antibiotics

AIMS researchers have identified and purified an antimicrobial compound produced by a common coral-associated bacterium, *Pseudovibrio*. The compound can prevent the growth of two coral pathogens, *Vibrio coralliilyticus* and *V. owensii*, at very low concentrations.

Bacteria associated with healthy corals have long been suspected of producing antimicrobial compounds that inhibit colonisation by invasive microbes and pathogens. Until now, however, these bacteria-derived antimicrobial molecules have not been found.

Pseudovibrio is abundant in many coral species and is able to break down dimethylsulfoniopropionate (DMSP), a sulphurous molecule that acts as a nutrient source for the bacterial communities associated with healthy corals. DMSP is also like the Vitamin C of corals—it scavenges free radicals.

Using chemical analyses, Jean-Baptiste Raina, who recently completed his AIMS@JCU PhD co-supervised by Dr David Bourne at AIMS and Professor Bette Willis at JCU, identified the antimicrobial compound as a sulphur-rich compound, probably derived from DMSP, known as tropodithietic acid (TDA). TDA is produced in large quantities by *Pseudovibrio*. But its production is temperature-dependent and decreases to almost nonexistent levels at the temperatures that cause thermal stress in corals. This provides a window of opportunity for the growth of pathogens that could lead to outbreaks of coral disease.



AIMS uses chemical analysis to monitor corals for disease. Image: J.B. Raina

Understanding Black Band Disease

Researchers from AIMS are being assisted by volunteers from the Mitsubishi Corporation in studies to document the impact of Black Band Disease (BBD), a virulent condition that leads to rapid loss of coral tissue, and to uncover its microbial and environmental causes.

The research project, led by Dr David Bourne, is based at the Orpheus Island Research Station on the central GBR about 100 km north of Townsville. As well as collecting baseline field data every six months since March 2012,

the research team and volunteers have set up and conducted an aquarium experiment, the results of which are still being analysed.

Infectious diseases have been identified as a major contributor to the decline in coral reef ecosystems worldwide. The work has already established that outbreaks vary seasonally and can be persistent.

In 2006, an outbreak of BBD was observed on reefs around Orpheus Island. The ongoing monitoring program has recorded recurring summer outbreaks that have caused significant mortality in susceptible coral populations. Cyclone Yasi caused a dramatic loss of coral cover on Orpheus Island in 2011; providing a unique opportunity to investigate the dynamic of disease within a recovering coral population.

Since mid-2011, AIMS has become a collaboration partner of Mitsubishi Corporation's *Global Coral Reef Conservation Project* in conjunction with Earthwatch Australia.

Historic baselines in Torres Strait

Over the past 100 years, the coral reefs of Mer Island in Torres Strait have altered in a manner consistent with climate change, a comparison of recent observations with those of an American survey of 1913 shows.

In particular, colonies of the bird's nest corals, *Seriatopora*—which are notably susceptible to bleaching at higher temperatures—have gone from being prevalent about 300 metres from the high tide mark to being few and far between. The work was carried out by researchers from AIMS assisted by specially trained rangers of the Torres Strait Regional Authority.

Substantial bleaching of corals on the shallow reefs around Thursday Island and Horn Island in 2010 led to AIMS staff becoming involved in a project to monitor the health of reefs in Torres Strait funded through the National Environmental Research Program (NERP) Tropical Ecosystems Hub. Mer Island was one of the locations where monitoring sites were established.

Coincidentally, Alfred Goldsborough Mayer, one of the pioneers of coral reef ecology, led an expedition from the Carnegie Institution in Washington to study the reefs of Mer Island in September and October 1913. Mayer's work provided a historical baseline for the studies, particularly a transect on the south-eastern reef flat referred to as "Line No. 1."

Contributing to the National Environmental Research Program

The program comprises five hubs, each of which draws on expertise from a range of disciplines and backgrounds and brings together more than 100 researchers and land managers. AIMS researchers are involved in three of the hubs across tropical Australia—the Northern Australia Hub, the Tropical Ecosystems Hub, and the Marine Biodiversity Hub.

In the Northern Australia Hub, AIMS contributes to major projects studying and modelling water flows in the Alligator Rivers region and using genomics to identify bacteria and other small animals in the soil of the Kakadu floodplains. The Marine Biodiversity Hub has made use of the AIMS vessel, *RV Solander*, to study the fish communities off Northern Australia.

The Tropical Ecosystems Hub science program is led by former AIMS research director, Dr Peter Doherty, now a senior AIMS scientist. AIMS personnel are involved in the development of an e-Atlas and in studies of seasonal changes in water quality in the GBR lagoon, long-term trends in reef health and coral cover, and the persistence of pesticides.



The National Sea Simulator (SeaSim) at Cape Ferguson at AIMS in Townsville. Image: S. Clarke

NATIONAL RESEARCH PRIORITY GOALS



The mission and budget expenditure of the Australian Institute of Marine Science (AIMS) align strongly with the Australian Government's National Research Priorities, particularly the priority of achieving "An Environmentally Sustainable Australia" (Priority A). Details of the National Research Priorities are provided in Appendix 2.

Through technological innovation and research into matters affecting marine biosecurity, AIMS contributes to priority goals in "Frontier Technologies for Building and Transforming Australian Industries" (Priority C) and "Safeguarding Australia" (Priority D).

The particular priority goals to which AIMS contributes are:

- 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.

The relative research effort delivered through AIMS' four Research Programs (see Research Plan 2011-2015) to these goals is shown on the following page. Through AIMS' ongoing commitment to research excellence, collaboration, and transfer of its research to end-users, AIMS contributes strongly to the National Innovation Priorities⁵.

5 www.innovation.gov.au/innovation/policy/Pages/Reviewofthenationalinnovationsystem.aspx

AIMS Research Programs 2012 -2013	National Research Priority								
	An Environmentally Sustainable Australia				Transforming Australian Industries			Safeguarding Australia	
	Priority Goals								
	A1	A2	A5	A7	C1	C2	C4	D1	D2
A healthy and resilient Great Barrier Reef									
Sustainable coastal industries in tropical Australia									
Sustainable use of North - West marine ecosystems									
Data and technology innovations									

Key

	High relevant—intended outcomes and planned activity directly focused on priority goals.
	Very relevant—intended outcomes and activity closely related to priority goals, but focused in related areas.
	Relevant—intended outcomes and planned activity related and likely to contribute to priority goals.

Examples of Delivering Outcomes Relevant to the National Research Priorities

Contributions to the success of the Reef Water Quality Protection Plan

The Reef 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 Great Barrier Reef Marine Park. The two governments have committed \$375 million to support this decadal action (2003-2013).

Outputs

In 2012-2013, AIMS completed the eighth 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). The health of the inshore Great Barrier Reef (GBR), as assessed by the MMP, was reported as part of the *Paddock-to-Reef Report Card*. AIMS scientists also contributed to the 2013 *Scientific Consensus Statement* on the impacts of land use on water quality and ecosystem condition of the GBR ⁶.

6 www.reefplan.qld.gov.au/about/scientific-consensus-statement.aspx

In partnership with CSIRO, AIMS biological oceanographers continue to build a large-scale water quality model for the GBR. The AIMS water quality database forms the backbone of data available to the modelers, complemented by Integrated Marine Observing System (IMOS) data. The water quality model includes sediment dynamics and biogeochemical models, which, coupled with the recently developed whole-of-GBR hydrodynamic model, will provide a capacity to predict impacts of catchment loads on water quality under acute flood event conditions, and chronic post-flood and dry season conditions.

Outcome

Reef Plan is an unprecedented action by governments to decrease the loads of sediments, nutrients and organic contaminants in terrestrial runoff. This will improve the resilience of inshore coral reefs faced with other stressors such as fishing, extreme weather events and climate change. Long-term programs such as the MMP will allow us to measure the trajectories of change and to better understand the complex responses of coastal ecosystems to anthropogenic pressures, including emerging ones such as the expected accelerated coastal development along the GBR coast.

The results from the MMP formed an important component of the second *Great Barrier Reef Report Card*⁷, which was released in April 2013. The results indicate that while there have been positive trends in indicators of catchment use, the key indicators of coastal West Queensland and reef health have not yet improved.

A series of very wet years, with associated flooding, may have delayed any positive signal from the improvement in landuse. This highlights that need for ongoing, long-term monitoring of coastal system health. The Consensus Statement has provided further authoritative interpretation of the current status of inshore reefs in the face of changing water quality and has been widely referenced in public discussion on the issue.

A2	A5	A7	C4
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Monitoring the impacts of the Montara oil spill

In 2009, an uncontrolled release from PTTEP Australasia's (PTTEP AA) Montara oil well in the Timor Sea lasted 77 days. It is the most significant such event to date. The spill occurred in a vast area of continental shelf off the north-west coast of Australia 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 major energy development companies.

Outputs

In 2012-2013 AIMS re-surveyed three shoals for, and with the support of, PTTEP AA to follow up surveys conducted in 2010 and 2011.

Outcome 1

The surveys provide valuable information to the company and environmental regulators about the status of reefs and shoals closest to the oil spill, and whether they differ from areas further away. The results have highlighted the importance of baseline data, collected prior to any incident, in detecting any unambiguous impacts from an oil release.

Outcome 2

These surveys provide important baseline information on the biodiversity attributes of the poorly documented shoals in the area, which will be valuable in interpreting post-impact survey results from any future incidents in the region.

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), the principal Commonwealth regulator for offshore oil and gas activities, now recognises the importance of baseline surveys, and included them in a recent NOPSEMA discussion paper⁸. NOPSEMA also now recognises the value of baseline surveys in Operational and Scientific Monitoring programs submitted by oil and gas companies.

A2	A5	A7	C4
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Documenting the health of the Great Barrier Reef over the last 27 years

AIMS set up a large scale monitoring program in 1985 to study the distribution and abundance of crown-of-thorns starfish (COTS) and since 1993, the Long Term Monitoring Program (LTMP) has been surveying the health of 47 reefs in the GBR annually.

Outputs

AIMS published a seminal paper in October 2012, which analysed 27 years of coral cover data from the LTMP on the GBR. The data showed a 50% overall decline in coral cover on the GBR between 1985 and 2012. The decline was most dramatic in the southern GBR, while reefs north of Cooktown experienced little or no loss of cover. The analysis of the three main causes of large scale, severe disturbance on the GBR indicated that cyclones and crown-of-thorns starfish were responsible for 48% and 42% of the decline, respectively, while coral bleaching accounted for 10%.

While the research publication was being reviewed for publication, AIMS hosted an international workshop on COTS that reviewed current knowledge and made several key recommendations for management of outbreaks and future research. Both the paper and the workshop noted that, since cyclones and bleaching are related to the larger problem of global climate change, action to reduce COTS outbreaks was one of the few direct measures that managers and policy makers could implement to improve the health of the GBR.

Outcome 1

The results of this study and the outcomes of the workshop played a significant role in informing the World Heritage Committee delegation investigating the status of the GBR World Heritage Area. It provided a backdrop of ongoing decline at a regional scale that could be considered together with the risks of other impacts, such as development of port infrastructure and shipping, on the GBR. The publication has also served to highlight the value of long-term ecosystem health monitoring through the identification of gradual but alarming trends in key health indicators.

Outcome 2

Following the publication and the COTS workshop, the Great Barrier Reef Marine Park Authority and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities have identified COTS outbreaks as a high priority issue. The Commonwealth Government has subsequently allocated significant new funding to work on innovative control measures that will provide more accurate estimates of overall COTS numbers in outbreak areas.

A1	A5	A7	C1	C4	D2
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Enhancing ocean observing capabilities in Northern Australia

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 2007-2008, AIMS began deploying infrastructure along the GBR in the first phase of IMOS, which is designed to monitor long-term changes in the oceanic drivers of Australian climate and coastal systems.

Outputs

In 2012-2013, AIMS maintained key observational systems along the GBR despite significant uncertainties in funding. New moorings in North-Western Australia are now fully operational and the data from moorings along the GBR are already providing critical inputs into hydrodynamic and biogeochemical models of an area where water quality dynamics are a major factor influencing ecosystem health.

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.

A2	A5	A7	C2	C4	D2
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Instrument moorings along the GBR allow AIMS to capture detailed data about environmental conditions on the reef. Image: AIMS



Multi-factorial experiments at the National Sea Simulator (SeaSim). Image: S. Clarke

RESEARCH PLAN 2011-2015



The Australian Institute of Marine Science (AIMS) Research Plan 2011-2015 was developed following recommendations from an external international science panel who reviewed the previous Research Plan (2007-2011), and consideration of the research priorities declared by key research users. Through engagement with stakeholders across government and industry, AIMS' objective is to continue its drive towards scientific excellence while ensuring that its multidisciplinary science capability, infrastructure and research investment remain focused on areas that are relevant and committed to national needs and aspirations.

The Research Plan is largely based on three broad strategic directions, which were reviewed and confirmed in 2010:

- understanding tropical marine ecosystems and processes
- forecasting responses of tropical marine systems to global changes
- supporting sustainable development of tropical marine-based industries.

This Research Plan, which extends to June 2015, will deliver new knowledge in ten Key Result Areas (KRAs):

1. New frontiers in tropical marine biodiversity
2. Baseline knowledge and monitoring for management
3. Patterns and processes in tropical marine biodiversity
4. Tropical aquaculture
5. Human impacts on water quality
6. Shelf-scale pelagic ecosystem processes
7. Australia's tropical seas—past and present
8. Resilience and vulnerability of coral reefs in a high-CO₂ world
9. Reef symbioses in a changing ocean
10. Harmful organisms.

During 2012-2013, AIMS reviewed the number and structure of research teams that deliver outcomes against the Research Plan, establishing new Research Programs to reflect our focus on the needs of our key stakeholders over this quadrennium. The Research Programs are:

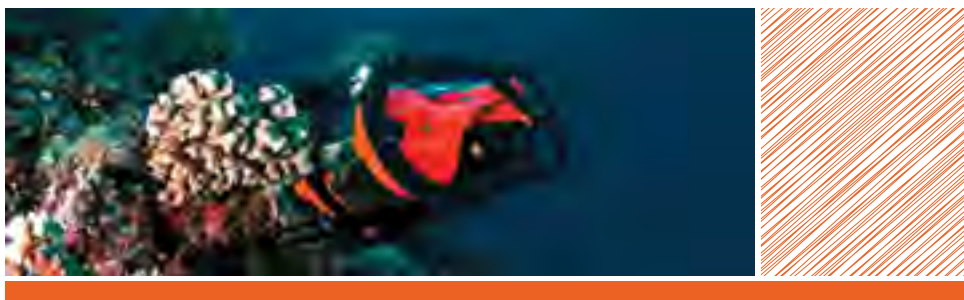
- A healthy and resilient Great Barrier Reef
- Sustainable coastal ecosystems and industries in tropical Australia
- Sustainable use of North-West marine ecosystems
- Data and technology innovations.

Highlights of the research currently underway or planned for commencement during the life of this Plan include:

- **Implementing the National Environmental Research Program (NERP) – Northern Australia, Tropical Ecosystems and Marine Biodiversity Hubs**—AIMS is a key partner in each of these hubs, which provide world-class environmental research to improve our understanding and management of Australia's unique biodiversity and ecosystems.
- **Enhancing ocean observing capacity in northern Australia**—With support from the Western Australian Government and other agencies, AIMS, through the Integrated Marine Observing System (IMOS), is significantly increasing the level of instrumentation in the Pilbara and Browse regions and has implemented further enhancements off Darwin and in the Great Barrier Reef (GBR), including real-time telemetry and a more robust under keel clearance system using mooring data.
- **Renewing key research partnerships in Western Australia**—Following the success of the first phase of research under the Western Australian Marine Science Institution (WAMSI), AIMS and the other WAMSI partners are now in a second phase of collaborative research to address Western Australia's research needs in the Kimberley region and to enhance our understanding of the impact of dredging on coastal systems. The group is also actively pursuing opportunities to expand to other regions and issues.
- **Continuing AIMS' record of excellence in research outputs**—AIMS' publications in tropical marine science continue to grow, with a record number of publications in 2012 (including 203 journal articles). AIMS is also placing further emphasis on high level analytical, policy-oriented publications and briefs that directly assist government agencies in making decisions about the sustainable use of Australia's coastal and offshore resources.
- **Fostering the next generation of research leaders in tropical marine science**—AIMS will continue its investment in early-career scientists through dedicated investments and co-funded agreements with other institutions. AIMS currently has 27 postdoctoral fellows co-funded through the Australian Research Council (Super Science Fellowships), NERP, and partnerships such as the North Australia Marine Research Alliance and the Research Collaboration Agreement between CSIRO, The University of Western Australia and AIMS. This investment will continue to grow in future years.
- **Achieving three decades of continuous monitoring of the GBR World Heritage Area**—During this research plan a milestone of 30 years continuous monitoring of reef status across the length and breadth of the GBR World Heritage Area (GBRWHA) will be achieved. It is the only coral reef monitoring program in the world with this geographic extent and longevity. Originally instigated to respond to outbreaks of crown-of-thorns starfish, the program maintains its core objectives and has also responded to additional management requirements by developing more quantitative surveys and targeting particular reefs to monitor key issues such as the effects of rezoning on fish stocks. The program is progressively maturing in its capacity to provide high level syntheses of trends and threats to the GBRWHA and it will provide the foundation for ongoing critical analyses of issues and options for managing the area.

The Research Program makes a fundamental contribution to the five-yearly *GBR Outlook Report*, and also underpins the current GBRWHA strategic assessment.

SCIENCE QUALITY

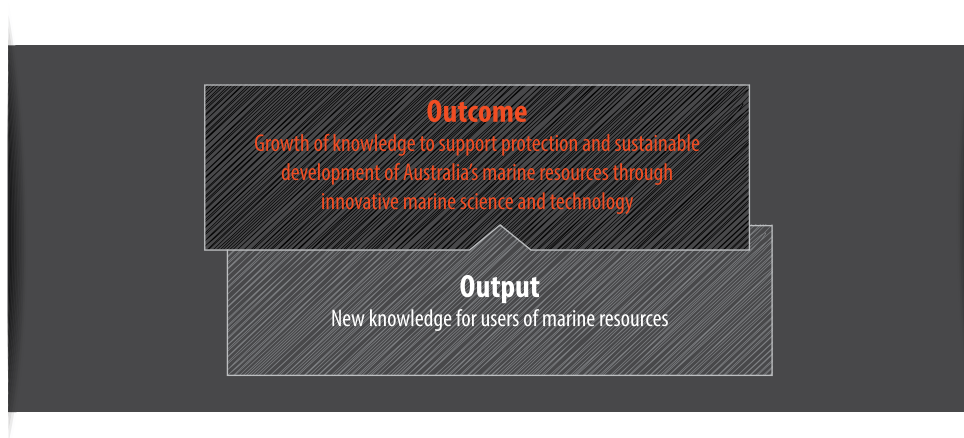


The Australian Institute of Marine Science (AIMS) undertakes high quality research for the protection and sustainable use of Australia's marine territory, focussing on Australia's tropical marine and coastal systems. This research directly supports Australian and state government initiatives such as Australia's Oceans Policy⁹, the National Research Priorities (see Appendix 2), the Reef Water Quality Protection Plan¹⁰, the Ningaloo Marine Park Management Plans¹¹ and the sustainable development of Northern Australia's coastal resources.

AIMS' research is attuned to the needs and priorities of industry, such as identification of new marine resource opportunities for industry and tropical aquaculture.

It is also designed to meet community aspirations, including the identification and protection of Australia's marine biodiversity.

Regular review of performance and capabilities is a central feature of planning and continuous improvement at AIMS. AIMS measures its performance against indicators that measure the quality, efficiency, delivery and effectiveness of its science (see Appendix 3). This report documents AIMS' performance in the second year of the *AIMS Research Plan 2011-2015* and demonstrates contributions to the AIMS Outcome as part of the outcome-output framework outlined in the Australian Government's Portfolio Budget Statement (see figure below).



9 <http://www.environment.gov.au/about/publications/archive.html#coasts>

10 <http://www.reefplan.qld.gov.au/index.aspx>

11 <http://www.environment.gov.au/coasts/mpa/publications/ningaloo-plan.html>

Delivering AIMS' Marine Research Program

To achieve its Outcome, AIMS follows the three broad research directions that underpin its Research Plan:

- understanding tropical marine ecosystems and processes
- forecasting responses of tropical marine systems to global changes
- supporting sustainable development of tropical marine-based industries.

This Outcome strategy relates directly to the 2012-2013 Portfolio Budget Statement's Marine Research Program, which identifies seven key performance indicators and seven outputs that AIMS will deliver through innovative marine science and technology and strong linkages with users. The tables below list deliverables and performance indicators for the Marine Research Program and provide examples of achievement in each of the areas.

Marine Program Deliverables

Describe patterns of biodiversity from multiple "voyages of discovery" to some of the most remote and inadequately surveyed areas of the continental shelf off North-West Australia in conjunction with Geoscience Australia	A 15-year study at Scott Reef, a remote coral system in the Indian Ocean, showed unexpectedly fast recolonisation following severe coral bleaching in 1988. The potential lack of recolonising coral larvae at the isolated reef was less important than the high survival and growth rates of the larvae that did settle, possibly due to the absence of human interference. (See Remote reefs can be tougher than they look, page 17)
Sustain fundamental observations of tropical Australian marine systems as a partner in Australia's Integrated Marine Observing System (IMOS)	In 2012-2013, AIMS continued to collect data associated with several IMOS programs. These include a network of oceanographic moorings across northern Australia; wireless sensor networks at several key reef locations on the Great Barrier Reef (GBR); benthic monitoring of corals in WA and seagrass on the GBR; and movement patterns of sharks in both WA and the GBR (See Examples of delivering outcomes relevant to the National Research Priorities, page 27)
Analyse long term data sets from the GBR and develop predictive models of the cumulative impacts of global change, resource extraction and industrial development on the GBR	Research published by AIMS and University of Wollongong scientists in 2012, based on the analysis of Long Term Monitoring Program (LTMP) data, showed that coral cover on the GBR had reduced by almost 50% over the last 27 years. The loss was attributed to storm damage (48%), crown-of-thorns starfish (42%), and coral bleaching (10%). (See Half the Great Barrier Reef's coral cover lost in the past 27 years, page 13)

Maintain AIMS monitoring of water quality of the GBR Lagoon and support for the decadal Queensland-Commonwealth Reef Water Quality Protection Plan (Reef Plan), while increasing effort on the development of tools for examining the potential impacts of urban and industrial development along the coast, with particular emphasis on marine dredging activities	Long-term data collected by the AIMS Water Quality and Ecosystem Health research team show that water quality in the lagoon between the GBR and the coast is driven mainly by seasonal processes such as river-floods and strong winds. (See GBR water quality linked to floods, cyclones and human activity, page 16)
Provide new insight to the possible future states of coral reefs in a high CO₂ world through the study of natural CO₂ vents (cold gas seeps) in Papua New Guinea (PNG).	A study of small unicellular, shelled marine organisms (forams) around natural CO ₂ gas seeps in PNG showed that closer to the seeps, where the water was more acidic, the creatures were less numerous and showed lower community diversity. At levels of acidity predicted for our oceans by 2100, forams, which make up 40% of some coral cays, were entirely absent. (See Early victims of ocean acidification could become extinct this century, page 15)
Collaborate in the development of implementation plans for operational and scientific monitoring programs to be instigated in the event of any future incidents similar to the Montara oil spill	AIMS led a consortium of research agencies and universities in Western Australia to develop a comprehensive program to implement an Operational and Scientific Monitoring Program (OSMP) for Shell and INPEX. This includes a significant program of baseline monitoring that will commence in the next year. Other companies operating in the area have also expressed interest in developing similar OSMP implementation and baseline programs. (See Examples of delivering outcomes relevant to the National Research Priorities, page 28)
During 2012-2013 AIMS will also deliver new infrastructure capacity provided by the AIMS Tropical Marine Research Facilities Project (funded under the Education Investment Fund)	The National Sea Simulator (SeaSim), a new research aquarium system at AIMS Townsville, has been constructed ¹² . The facility will enable Australian scientists to recreate ocean conditions and study how both human activities and natural events will affect our marine environment in the future. (See World class aquarium facilities to test how climate change will affect Great Barrier Reef corals, page 18)

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SeaSim was opened by Minister for Innovation, Industry, Science and Research Senator Kim Carr and Senator for Queensland Jan McLucas in August 2013

Marine Program Key Performance Indicators

Maintain or increase scientific output and quality as measured by the level of peer reviewed scientific journal papers	AIMS scientists published 203 peer-reviewed scientific journal papers in 2012 compared with 177 in 2011. (See Science publications, page 40)
Maintain or increase the transfer of new knowledge to users of marine science as measured by the trend in all publication numbers (includes reports, etc.) and stakeholder take-up of AIMS' practices, instruments and processes.	The total number of AIMS publications (journal articles, books, book chapters, conference papers, technical and client reports, theses and others) in 2012 was 263, an increase from 236 in 2011. The number of website visitors to AIMS' real-time weather stations and web cameras rose 10% to approximately 11,000 per month. (See Science publications, page 40; Adoption by users, page 45)
Maintain or improve science excellence and impact as assessed through a rolling program of expert peer review.	AIMS is currently part way through its 2011-2015 Research Plan. The last review was in 2010 in preparation for the development of the current Research Plan. The next scheduled peer review will take place as part of the process in developing the next Research Plan.
Collaborate to increase critical mass and research capabilities as measured by the number of collaborative research papers.	AIMS scientists were involved in a greater number of collaborative projects in 2012-2013 than the previous year, and collaborative research papers accounted for 89% of AIMS' scientific articles published in 2012, an increase from 76% in 2011. (See Collaboration, page 48)
Partner to increase research capacity and impact as measured by the number of joint ventures and strategic alliances.	AIMS maintained, and in some cases expanded, its major joint ventures and strategic alliances, including the Arafura Timor Research Facility (ATRF), the North Australia Marine Research Alliance (NAMRA), the Australian Research Council Centre of Excellence for Coral Reef Studies (CoECRS), the Reef Rescue Marine Monitoring Program, the National Environmental Research Program (NERP) Tropical Ecosystems Hub, IMOS, the Western Australian Marine Science Institution (WAMSI), the Indian Ocean Marine Research Centre (IOMRC). (See Research and stakeholder partnerships, page 45)
Enhance Australia's future capabilities in marine science by AIMS' contribution to training as measured by the number of jointly supervised postgraduate students.	AIMS scientists supervised 68 postgraduate students in 2012-2013, slightly fewer than the 75 in 2013. However, this reporting period saw a greater number of completions—29 PhD students completed their theses. (See Postgraduate studies, page 52)

<p>Enhance Australia's marine research capabilities by effective delivery of new infrastructure capacity provided by the AIMS Tropical Marine Research Facilities Project (funded under the Education Investment Fund).</p>	<p>The AIMS Tropical Marine Research Facilities Project has funded SeaSim and new facilities to house AIMS' Tropical Marine Collections at AIMS Townsville and a new research aquarium building and other research facilities at the ATRF. New berthing facilities for AIMS' research vessels have recently been commissioned in Townsville. (See AIMS Tropical Marine Research Facilities Project, page 54)</p>
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Science Leadership

AIMS plays an important science leadership role in a number of different ways, including setting research agendas through strategic research workshops on key issues, giving keynote talks at international symposia and contributing to national issues through government committees and policy-oriented projects.

Contribution to National Issues

World Heritage Committee concerns over the Great Barrier Reef World Heritage Area

In 2012-2013 the World Heritage Committee visited Australia to investigate concerns over the health of the GBR and proposals to significantly increase the size and number of ports along the Queensland coast. AIMS played a significant role in briefing the delegation during their visit to Australia. It also made a major contributions to several underpinning projects for the Great Barrier Reef World Heritage Area (GBRWHA) Strategic Assessment, which the Committee requested be undertaken as a matter of priority prior to any decision on whether to list the GBRWHA as "in danger".

AIMS led one major project "A Framework for Understanding Cumulative Impacts and Supporting Environmental Decisions", which provided a conceptual model and guidance to assess resilience of the GBR. This approach has received broad support from the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) and the Great Barrier Reef Marine Park Authority (GBRMPA) and is influencing future plans for managing the GBR for enhanced resilience.

AIMS also played a major role in a separate project to develop an Integrated Monitoring Framework for the GBRWHA which set out the theoretical principles underpinning effective monitoring and developed a draft framework for a fully integrated GBR monitoring program. AIMS and GBRMPA are currently working on a detailed implementation plan to ensure that these concepts are fully incorporated into future monitoring.

International Workshops

Defending the Great Barrier Reef, 3-7 July 2012, Fitzroy Island

AIMS hosted 40 international experts at a three-day workshop, preceeding the 12th International Coral Reef Symposium in Cairns, to consider the desirability and feasibility of taking direct action to suppress outbreaks of the crown-of-thorns starfish (COTS). The workshop produced a consensus statement which urged direct action against COTS outbreaks and outlined a number of priority actions to address this issue. Subsequently the federal government, through NERP Emerging Priorities and Caring for our Country programs, has funded work on direct COTS control as well as additional surveys and research on more effective control measures.

Resilience of coral reefs, July 2012, Fitzroy Island

Managing for resilience is a high-priority goal for reef conservation practitioners world-wide. To bring science, management, policy and conservation practice together around critical resilience challenges for coral reefs, Dr Ken Anthony from AIMS and Dr Paul Marshall from GBRMPA jointly led an international workshop on Fitzroy Island.

The workshop was attended by 30 leading players and institutions, with expertise in:

- marine research and ecosystem modelling (such as the US National Oceanic and Atmospheric Administration, the ARC CoECRS and the Resilience Alliance)
- decision science (the ARC Centre of Excellence for Environmental Decisions at the University of Queensland (UQ)),
- reef management, conservation planning and policy (SEWPaC, The Nature Conservancy, the International Union for Conservation of Nature (IUCN), CORDIO (Coral Reef Degradation in the Indian Ocean) and the United Nations Environment Program)
- social sciences (CSIRO).

The group produced a novel framework for resilience-based management that enables reef managers and planners to identify effective actions to build resilience for coral reefs under cumulative stressors including climate change. The result of the group's work was an AIMS-led 29-author consensus paper entitled "Operationalising resilience for marine conservation", which is currently in review in *Conservation Biology*.

Conference support

AIMS supported Australian marine science conferences with financial sponsorship to the Australian Coral Reef Symposium and Australian Marine Science Association Conference and was a major contributor to the 12th International Coral Reef Symposium (see AIMS displays its wares at international coral conference, page 23).

Science publications

AIMS has a strong publication record within its fields of core capability, namely climate change, biodiversity, water quality and marine microbiology, and this output aligns closely with the needs of AIMS' major stakeholders and end-users. Publication data is collected on a calendar year basis, and in 2012 AIMS researchers published 203 journal articles—a record for AIMS.

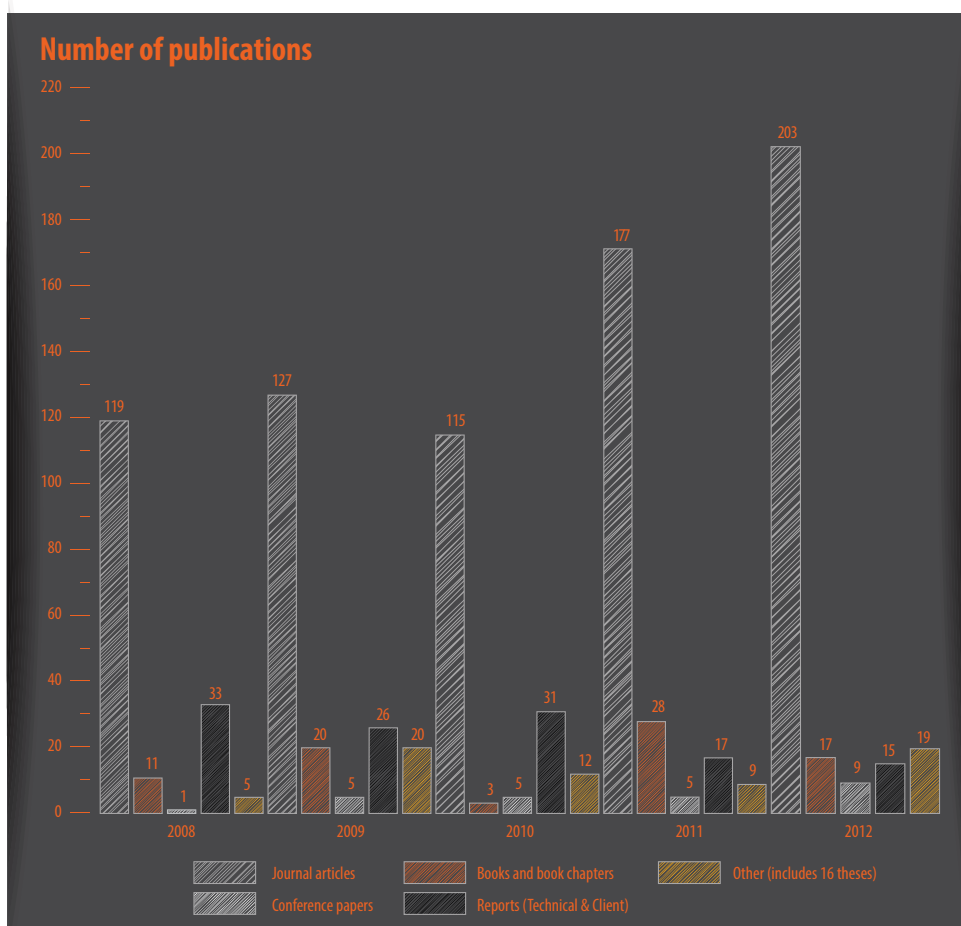
The full publications list is provided in Appendix 4.

High impact articles

The average (Thomson ISI) impact factor for all 203 journal articles published in 2012 was 3.8, with 74 articles (36%) in journals with impact factors greater than four (compared with 28% in 2011-2012).

The Institute continues to publish high-profile papers in some of the world's most prestigious multi-disciplinary journals. While several are described in the Highlights section of this report, numerous others contributed significantly to the science literature during 2012. Selected examples, with AIMS authors shown in bold, include:

Howells EJ, Beltran VH, Larsen NW, **Bay LK**, Willis BL, **van Oppen MJH** (2012) Coral thermal tolerance shaped by local adaptation of photosymbionts. *Nature Climate Change* 2: 116-120



Coral's survival in warming waters is influenced by the types of symbiotic algae (single-celled dinoflagellates of the genus *Symbiodinium*) they are partnered with. The algae provide food from photosynthesis to the coral and receive inorganic nutrients in return. Partnering with multiple, functionally diverse *Symbiodinium* types is known to increase coral survival as water temperature rises. This study was the first to show that variations within one *Symbiodinium* type can also provide benefits. It showed that *Symbiodinium* types can adapt to local differences in thermal climate and that this adaptation shapes the fitness of coral hosts. If *Symbiodinium* populations are able to further adapt to increases in temperature at the pace at which ocean climates warm, they may assist corals to increase their thermal tolerance and persist into the future.

Fan L, Reynolds D, Liu M, Stark M, Kjelleberg S, **Webster NS**, Thomas T (2012) Functional equivalence and evolutionary convergence in complex communities of sponge symbionts. *Proceedings of the National Academy of Science* 109: E1878-E1887

Sponges have symbiotic relationships with complex communities of microbes, interacting in a variety of metabolic processes. Looking at microbial communities associated with six phylogenetically divergent sponge species, the scientists found that the symbiont microbiota were also from distinct evolutionary lineages. Yet they provided similar

core functions to the sponges using analogous enzymes and biosynthetic pathways. This suggests that the symbiont communities in the divergent hosts have converged evolutionarily, that is, they have evolved different genomic solutions to perform the same function or to occupy the same niche. Prior to this study, such a situation was only known for simple symbiont systems in insects.

Glas MS, Sato Y, Ulstrup KE, Bourne DG (2012) Biogeochemical conditions determine virulence of black band disease in corals. *The ISME Journal* 6: 1526-1534

Scientists measuring biogeochemical conditions on a micro scale and under different light intensities found that the extent to which corals suffer from black band disease (BBD) is determined by the microbial community rather than a defined pathogen. BBD is a virulent condition where the presence of a mat of microbial organisms leads to the death of coral tissue. Spread of BBD was found to be associated with high levels of sulphide and lowered pH and oxygen.

Puill-Stephan E, van Oppen MJH, Pichavant-Rafini K, Willis BL (2012) High potential for formation and persistence of chimeras following aggregated larval settlement in the broadcast spawning coral, *Acropora millepora*. *Proceedings of the Royal Society of London B Biological Sciences* 279: 699-708

In some corals, known as brooders, eggs are fertilised within a female polyp and the larva is released at an advanced stage of development and ready to settle close by. Those that settle and then grow to touch are known to sometimes form chimeras—that is, the genetically distinct corals fuse together to share genetic material. This study examined the presence of chimeras in coral that broadcast their spawn and found that, under experimental conditions, many of the larvae settled in aggregations. Half of the young corals were found to be chimeras and, particularly when comprising closely related genotypes, these chimeras persisted for the length of the study (almost two years). The chimeras were larger at three months than solitary juveniles, suggesting that chimerism may be a beneficial strategy.

Uthicke S, Fabricius KE (2012) Productivity gains do not compensate for reduced calcification under near-future ocean acidification in the photosynthetic benthic foraminifer species *Marginopora vertebralis*. *Global Change Biology* 18: 2781-2791

Changes in the seawater carbonate chemistry (ocean acidification) from increasing atmospheric carbon dioxide (CO₂) concentrations will be detrimental to marine organisms that produce calcareous shells. But it may benefit primary producers, such as algae, if dissolved inorganic carbon is a limiting factor. This research looked at productivity, respiration, and abundance of the foraminifer species *Marginopora vertebralis*. These single-celled shelled forams are abundant in coral reefs and are a major contributor to the sand that forms coral cays. They host symbiotic algae, which could benefit from the increased dissolved organic carbon. As expected, higher CO₂ levels were associated with both reduced calcification and increased production of the symbiotic algae. However the increased algal production did not provide any net benefit. The study concluded that *M. vertebralis* cannot maintain populations in water where pH is less than 7.9, and may thus become extinct in the next century.

Weber M, de Beer D, Lott C, Polerecky L, Kohls K, Abed RMM, Ferdelman T, Fabricius KE (2012) Mechanisms of damage to corals exposed to sedimentation. *Proceedings of the National Academy of Sciences of the United States of America* 109: E1558-1567.

Scientists investigated the mechanisms leading to the rapid death of corals when exposed to runoff and resuspended sediments. They found impacts were much greater when the sediment was high in organic matter. Microbial processes triggered by the organic matter reduce the pH and levels of oxygen, which begins the process of tissue degradation. The subsequent bacterial decomposition of coral tissue forms hydrogen sulphide, which diffuses to the neighboring tissues and accelerates the spread of colony mortality. The results suggest that the organic enrichment of coastal sediments is a key process in the degradation of coral reefs exposed to terrestrial runoff.

Webster NS, Taylor MW (2012) Marine sponges and their microbial symbionts: love and other relationships. *Environmental Microbiology* 14: 335-346.

This mini review examines recent major developments in the microbiology of sponges and their symbiotic microorganisms, incorporating recent research into the *in situ* activity and function of these symbionts. The review identified several research areas (such as biology of viruses in sponges, effects of environmental stress) that deserve increased attention.

Other significant publications

Dr Daniel Alongi is developing standard procedures for estimating greenhouse gas sources and sinks for coastal wetlands as a lead author for the Intergovernmental Panel for Climate Change (IPCC). This work contributes to supplementary guidelines to the 2006 Guidelines for National Greenhouse Gas Inventories required by the IPCC under various climate change agreements, including the Kyoto Protocol, because numerous ecosystems, including coastal wetlands, were not included in the 2006 guidelines.

Drs Janice Lough, Nicole Webster, David Bourne, David McKinnon, Ken Anthony, Mark Meekan and Alistair Cheal contributed to the *Marine Climate Change in Australia. Impacts and Adaptation Report Card for Australia 2012*¹³, an assessment of the current and predicted future state of Australia's marine climate, and its impact on marine biodiversity.

In 2012-2013, many AIMS scientists contributed to the Reef Water Quality Plan 2013 *Scientific Consensus Statement: Land use impacts on Great Barrier Reef water quality and ecosystem condition*¹⁴, (published in July 2013). Dr Britta Schaffelke and Dr Katharina Fabricius were lead authors, Dr Peter Doherty was on the independent science panel, and Dr Ken Anthony, Dr Andrew Negri, Angus Thompson and Dr Miles Furnas also contributed to the technical chapters underlying the consensus statement. The statement identified that that key GBR ecosystems are showing declining trends in condition due to continuing poor water quality, cumulative impacts of climate change and increasing intensity of extreme events.

Coral Bleaching. Patterns, Processes, Causes and Consequences, a 2009 ebook edited by Dr Madeleine van Oppen and Dr Janice Lough, was one of the top 25% most downloaded eBooks in the Springer Ecology Collection in 2012. Since its publication, the book has had 6,519 chapter downloads, including 1,944 in 2012.

Plenaries, keynote addresses and invited lectures

Keynote lectures given by AIMS scientists at conferences in 2012 include:

- Dr Madeleine van Oppen gave a plenary talk at the International Coral Reef Symposium 2012, 3-9 July 2012, Cairns, Australia.
- Dr Peter Doherty was an invited speaker at the Second Australian Earth System Outlook Conference, The Shine Dome, Australian Academy of Science, 26-27 November 2012, Canberra.
- Dr Ray Berkelmans gave a lecture "Coral bleaching, climate change and adaptation: The GBR experience" at the Institute for Research and Development, 9 April 2013, Noumea, New Caledonia.

13 E.S. Poloczanska, A.J. Hobday and A.J. Richardson (Eds) (2012). *Marine Climate Change in Australia, Impacts and Adaptation Responses*. 2012 Report Card. ISBN 978-0-643-10927-8 www.oceandclimatechange.org.au/content/index.php/2012/home/

14 www.reefplan.qld.gov.au/about/scientific-consensus-statement.aspx (published in July 2013)

Expert committees and advice

AIMS scientists contribute to the broad-scale planning, coordination and delivery of marine science as members of numerous national and international forums (see Appendix 5). For example:

- Dr Dan Alongi is a coordinating Lead Author, Intergovernmental Panel on Climate Change (IPCC), Wetlands Chapter, 2013 National Greenhouse Gas Inventory (see Other significant publications, page 43).
- Dr Nicole Webster is an International Board Member for the International Society for Microbial Ecology (ISME).
- Dr Katharina Fabricius has been appointed to the Ocean Acidification Expert Review Committee of the United Nation's Convention on Biological Diversity.
- Dr Peter Doherty was appointed to the Antarctic Scientific Advisory Committee.
- Dr Britta Schaffelke and Dr Richard Brinkman are members of the Scientific Advisory Committee of the Gladstone Healthy Harbour Project.
- John Gunn is the chair of the Australian Government's Oceans Policy Science Advisory Group (OPSAG).
- John Gunn is the co-chair of the Global Ocean Observing System (GOOS)
- Dr Andrew Heyward was appointed by the WA Minister for Environment and Heritage as an independent expert for the Gorgon Marine Turtle Expert Panel under Ministerial Statement 800 for the Gorgon Gas Development Revised and Expanded Proposal.

AIMS scientists also provide expert advice to various state, Commonwealth and international standing committees and working groups. AIMS made submissions to the following processes during 2012-2013:

- Independent Review of the Port of Gladstone that was conducted by SEWPaC
- the Queensland Government Great Barrier Reef Ports Strategy
- the Abbot Point Cumulative Impact Assessment conducted by the Abbott Point Working Group (comprising the commercial partners proposing the development)
- to SEWPaC on the following Marine Reserve Management Plans:
 - *Coral Sea Commonwealth Marine Reserve Management Plan 2014-2024*
 - *North Commonwealth Marine Reserves Network Management Plan 2014-2024*
 - *North West Commonwealth Marine Reserves Network Management Plan 2014-2024*
- the Environment Regulations Review, Resources Division, Department of Resources, Energy and Tourism on the Review of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009.

In addition, AIMS:

- provided feedback on the Commonwealth Financial Accountability Review position paper *Sharpening the Focus: A Framework for Improving Commonwealth Performance*

- staff appeared as witnesses at two House of Representative Committee Hearings during the year:
 - Standing Committee on Climate Change, Environment and the Arts – *Australia's biodiversity in a changing climate*
 - Standing Committee on Agriculture, Resources, Fisheries and Forestry – *Role of Science for the future of fisheries and aquaculture*.

Adoption by users

AIMS' research outputs were made available and used in many ways over the year. Examples include:

- AIMS' water quality research (on nutrients, sediments and pesticides) has contributed to risk assessments and scientific consensus statements for water quality on the GBR, coordinated by the Queensland Department of Environment and Heritage.
- Results from AIMS' herbicide research were provided to SEWPac Chemical Assessment Group, enabling them to update assessment protocols for herbicide use in GBR catchments.
- AIMS' water quality research contributed to the Federal Government's Reef Rescue initiative, the Queensland Reef Regulations and the Paddock-to-Reef Monitoring, Modelling and Reporting Program, coordinated by the Queensland Government.
- Real-time weather stations and web cameras are available to external users (including the Bureau of Meteorology) and the general public. These resources support approximately 11,000 website visitors per month. New installations include a camera and upgraded weather station in Cleveland Bay, two new stations in the Torres Strait under NERP funding and a public data display on Thursday Island. Planned improvements include an underwater camera at Agincourt and one at Heron Island under an ARC Linkage project.
- AIMS managed the development phase of a research program at James Cook University (JCU) that discovered a more effective method of culling crown-of-thorns starfish and the biosafety trials required by GBRMPA that have since led to this technique being taken up by the multi-million dollar starfish control program carried out by the Association of Marine Park Tourism Operators (AMPTO).

Research and stakeholder partnerships

AIMS has created or participated in an array of joint ventures, strategic alliances and significant collaborations in order to maximise its capacity to deliver high quality science outcomes. Such arrangements 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 2012–2013, the majority of AIMS' scientific tasks received external co-investment involving stakeholders and partners who have actively participated in the research design, implementation and knowledge dissemination.

Major partnerships include:

The Arafura Timor Research Facility (ATRF) is a joint venture initiated in 2006 between AIMS and ANU with a mission to support marine science across northern Australia and other countries bordering the Arafura and Timor Seas (Indonesia, New Guinea, and Timor). With construction funding as a Major National Research Facility provided by the Australian Government, ATRF consists of an office and laboratory complex located in Darwin, adjacent to the campus of Charles Darwin University (CDU).

On 24 May 2013, following a \$5 million refurbishment funded from the Australian Government's Super Science (Marine and Climate) Initiative, the upgraded ATRF was opened by Senator the Hon Don Farrell the then Minister for Science and Research. It now houses added additional offices, modern meeting facilities, a seawater research aquarium, and workshop facilities to support oceanographic research and is the headquarters of the North Australia Marine Research Alliance (NAMRA).

In 2012-2013 the tropical ecotoxicology project, which is developing a suite of toxicity tests for northern Australian species to predict potential impacts of a wide range of marine contaminants, benefited from the upgrade as the Aquaria Facility becoming fully operational. The project is largely funded by Rio Tinto Alcan, Pacific Aluminium and Queensland Alumina limited.

With continued development of Darwin Port during the year, AIMS has provided research to support navigation for the Darwin Port Corporation, and also for dredging associated with construction of the Darwin Marine Supply Base.

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

The North Australia Marine Research Alliance (NAMRA), brings together AIMS, CDU, The Australian National University (ANU) and the Northern Territory Government to build marine research capacity and capability in northern Australia. It continues to grow and deliver on its goal under current director Edward Butler (from AIMS), with six postdoctoral fellows and two PhD scholars in place at the end of the reporting period.

Further details at <http://www.namra.net.au/>

The ARC Centre of Excellence for Coral Reef Studies (CoECRS) was established by the ARC in 2005—creating a partnership between AIMS, ANU, GBRMPA, JCU, UQ and 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. AIMS CEO John Gunn is a member of the Centre's Advisory Board and three AIMS 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 UQ, now leads AIMS' research into climate change and ocean acidification.

In 2012-2013 Dr Thomas Bridge was appointed an AIMS-CoECRS postdoctoral fellow. He will be conducting work on the ecological significance of deep and submerged reefs on the GBR in North-West Australia.

In 2012-2013 AIMS provided major sponsorship to the Centre to support the 12th International Coral Reef Symposium in Cairns in 2012.

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

The Reef Rescue Marine Monitoring Program (MMP) supports the Reef Water Quality Protection Plan (Reef Plan), which was a \$375 million decadal investment (2003-2013) by the Australian and Queensland Governments. After an update in 2009, the new Reef Plan 2013 has a renewed focus with the explicit long-term goal to "ensure that by 2020 the quality of the water entering the reef has no detrimental impacts on the health and resilience of the Great Barrier Reef". The new Reef Plan will be supported by a renewed governmental commitment to fund Reef Rescue under the Caring for our Country Initiative. The MMP is coordinated by GBRMPA as a partnership between AIMS, CSIRO, JCU and the National Research Centre for Environmental Toxicology (Entox), which is based at UQ.

Since 2005, AIMS has monitored the quality of the receiving waters at 20 fixed sites along more than 1,000 km of coastline, using the RV *Cape Ferguson*. This is supplemented by small-boat-based diving operations to monitor the health of 32 coastal and inshore coral reefs within this region. Both elements are combined with results from the other

partners into the Paddock to Reef Integrated Monitoring and Reporting Program, which is coordinated by the Reef Plan Secretariat within the Queensland Department of Premier and Cabinet. The most recent report card, giving progress towards targets up to June 2011, was published in 2013¹⁵.

Further details at http://www.gbrmpa.gov.au/corp_site/info_services/science_management/marine_monitoring_program

The National Environmental Research Program Tropical Ecosystems (NERP TE) Hub is the largest of five science programs undertaking applied environmental science research as a part of the National Environmental Research Program established by SEWPaC. The NERP TE Hub delivers research for north Queensland designed to: improve environmental decision-making processes in regionally-based natural resource management agencies (such as the Torres Strait Regional Authority, the Wet Tropics Management Authority and GBRMPA); influence the formation of environmental policy by Australian governments; and, inform and influence other stakeholders (industries, non-government organisations and Indigenous organisations). With co-investment from the major research partners (AIMS, CSIRO, JCU, and UQ), this joint venture represents expenditure on environmental research for North Queensland of more than \$63 million between 2011 and 2014.

The NERP TE Hub is administered by the Reef and Rainforest Research Centre in Cairns and the science program is led by Dr Peter Doherty from AIMS. In 2012, the NERP TE Hub funded an analysis of AIMS' long-term monitoring data, which revealed that average coral cover on the majority of reefs on the GBR had declined to half of the levels measured in 1985. Publication of this alarming result has been followed by many actions including another five years of Reef Plan—with commitments of \$375 million from the Australian and Queensland Governments to halt and reverse the decline of water quality entering the GBR Lagoon, \$8 million from the same sources for an industry-led program of direct action against population explosions of the crown-of-thorns starfish, and \$1.4 million from the Australian Government for research into more effective ways to suppress the episodic outbreaks of this enormously-damaging coral predator.

Further details at <http://www.nerptropical.edu.au/>

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

IMOS has been a highly successful NCRIS investment, bringing together universities and publicly-funded research agencies in the marine sector in a cooperative model without precedent. Recognising this success, the Australian Government has extended its base support for IMOS until at least 2015. Since IMOS became operational in 2007, the Queensland Government has co-invested over \$7 million in data streams to monitor the marine climate affecting the GBR; and in its 2011-2012 budget the Government of Western Australia committed an additional \$6 million over four years for ocean observing, predominantly in the tropics.

AIMS is the major operator of IMOS infrastructure in northern Australia's north-west region, which includes the World Heritage listed Ningaloo Marine Park, the remote and pristine Kimberley region, and the vast amount of infrastructure deployed by the offshore oil and gas industry. AIMS is also the sole operator of IMOS infrastructure in the Northern Territory, where the Darwin Ports Corporation has co-invested significant cash and services in a real-time data network that provides information on sea states, current flows, and under-keel depths for large ships transiting the narrow approaches of Darwin Harbour.

Further details at <http://www.imos.org.au/>

15 Great Barrier Reef Report Card 2011, Reef Water Quality Protection Plan, <http://www.reefplan.qld.gov.au/measuring-success/report-cards/report-card-2011.aspx>

The Western Australian Marine Science Institution (WAMSI) is a partnership to improve knowledge and understanding of Western Australia's marine environment for better resource development, management and conservation outcomes. It was launched in May 2007 with an initial investment of \$21 million over five years from the State Treasury. In 2011, the Western Australian Government Office of the Environmental Protection Agency was admitted as a sixteenth partner joining four Perth universities, two major resource companies, two publicly-funded research agencies (CSIRO and AIMS), three State Government departments, the Western Australian Museum, the Bureau of Meteorology, the WA Chem Centre, and a regional ocean observing network for the Indian Ocean. A review of performance in 2011 showed that WAMSI had enlisted 250 scientists, directly employed four postdoctoral fellows and supervised 35 doctoral students in activity worth over \$90 million over the first five years and producing a high return on the initial investment.

In 2011-2012, the Western Australian Government provided \$12 million over six years for development of WAMSI 2, which will focus on strategic research in the Kimberley region. In addition, funding from industry has enabled the establishment of a Dredging Node to understand and mitigate the impacts of coastal dredging. Dr Ross Jones is the Science Node leader for this major research effort. In 2012-2013 AIMS researchers led and participated in detailed multi-institutional program and project proposal development, and work is now commencing on this exciting new phase of strategic research in WA.

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

The Indian Ocean Marine Research Centre (IOMRC) is a joint venture that unites four Australian research organisations working in and around the Indian Ocean (AIMS, CSIRO, the UWA Oceans Institute and the Western Australian Department of Fisheries). The partnership evolved from a collaborative research agreement between AIMS and UWA that began when AIMS staff in Perth were co-located with UWA marine academics and students to form the UWA Oceans Institute.

The IOMRC will maximise science delivery by leveraging the strengths from each of the four major research organisations in the region. It will fund and train early-career researchers in a number of disciplines as well as to expose doctoral students to a multidisciplinary research environment.

In 2011, CSIRO became the third signatory to the Agreement and in the same year, the partners received significant infrastructure funding from the Federal Government Education Investment Fund to construct a new building (approximately \$52 million) on UWA's Crawley Campus and to upgrade the Western Australian Department of Fisheries Watermans Laboratory on the coast, which will be used by the Department, CSIRO and the UWA Oceans Institute. The partnership was expanded to include the Fisheries Department, and the 2011-2012 State budget provided a further co-investment of \$4 million for the upgrade of Watermans. Plans are now nearly completed for the construction of the new building. Once completed, the IOMRC will represent the largest concentration of marine research capability in the Indian Ocean Rim.

Further details at <http://www.oceans.uwa.edu.au/iomrc>

Collaboration

Collaboration is central to AIMS' organisational culture and to leveraging its science capabilities and capacity.

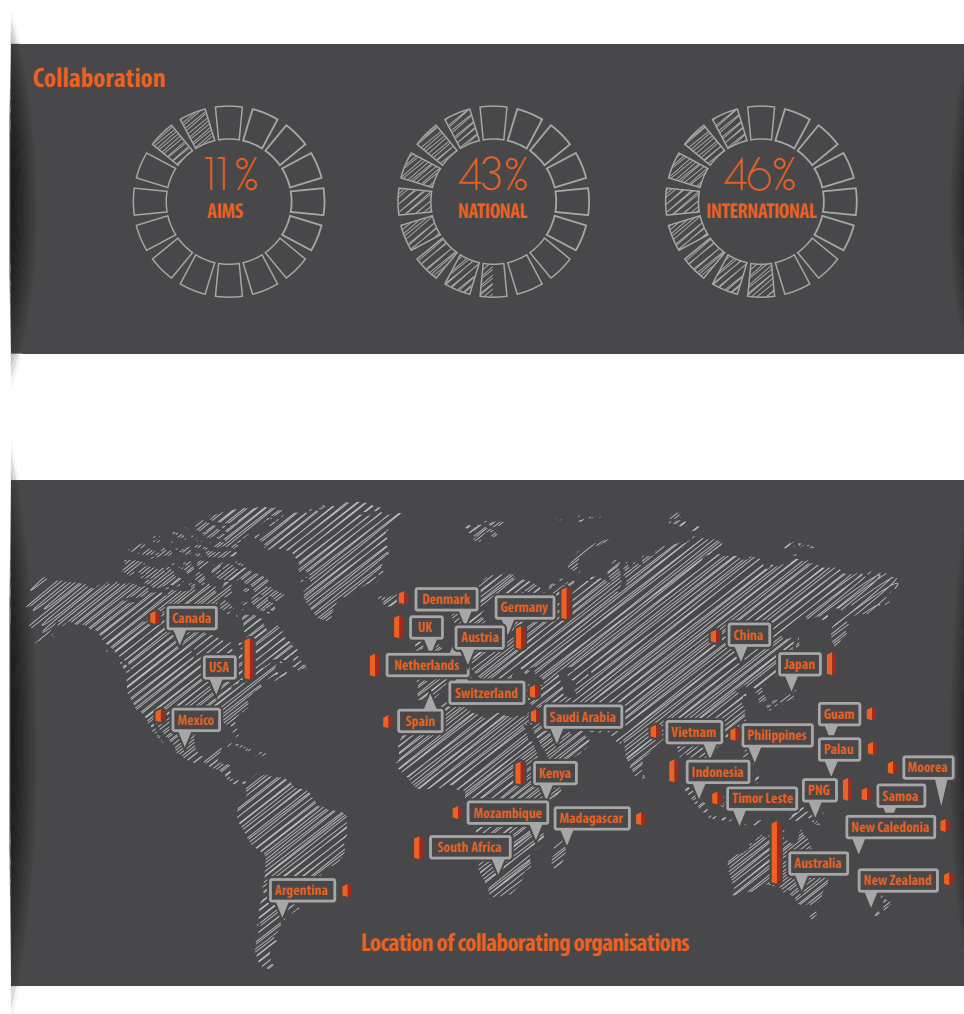
The strength of AIMS' collaboration with external organisations is apparent from the fact that, out of the 203 journal articles published by AIMS, only 22 (11%) were solely authored by AIMS staff. In contrast, 88 (43%) of articles had co-authors from other Australian research organisations and 93 (46%) involved international colleagues.

AIMS scientists collaborate with colleagues from around the world in many projects. The map below shows locations of currently active collaborative projects.

The statistics are impressive. In 2012-2013 AIMS scientists were involved in:

- 175 projects
- conducted in 30 countries
- involving 159 Australian scientists
- from 46 Australian organisations*
- and 102 overseas colleagues
- from 80 overseas organisations.

*This figure includes six organisations within CSIRO, namely, CSIRO Land and Water; CSIRO Information and Communication Technologies; and CSIRO Marine in Hobart, Perth, Brisbane and Darwin.



The PNG CO₂ seeps project alone has initiated new collaborations with 18 scientists from 12 research organisations (three national, nine international) within the last two years. The aim of the PNG seeps project is to investigate the acclimatisation potential of marine life to long-term ocean acidification (see Early victims of ocean acidification could become extinct this century, page 15). Two examples illustrate the potential of the AIMS led research at this unique site to establish new collaborations:

- AIMS has become a co-Investigator in BIOACID (Biological Impacts of Ocean Acidification, Phase II), one of the largest collaborative research programs to assess the effects of ocean acidification on marine systems. This project (led by Dr Dirk de Beer from the Max-Planck-Institute for Marine Microbiology, Bremen, and Dr Katharina Fabricius (AIMS), funded by the German Ministry of Science and Research) has led to new collaborations with biogeochemists, modellers, microbiologists and biological oceanographers from six international research organisations.
- A newly awarded grant from the Great Barrier Reef Foundation for research at the PNG CO₂ seeps, which is led by AIMS, involves scientists from three Australian and three international institutions.

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. This allowed AIMS to improve its capacity and skills for future science needs.

Name	Affiliation	Topic
Dr Graham Jones	Southern Cross University	Production of dimethylsulphide (DMS) and sulphur precursors (DMSP, DMSO) by hard corals: Implications for climate change and oxidative stress
Professor Carlos Duarte	Director, Oceans Institute, University of Western Australia	Biogeochemistry of northern Australian seas
Professor Thomas Rattei	Department of Computational Systems Biology, University of Vienna	Microbial genomics and bioinformatics

Archival collections

AIMS maintains and continues to study several major collections of biological, geological chemical and digital material, gathered over numerous years. Samples and specimens from these collections may yield new data as technological and methodological improvements lead to new analytical methods.

One collection, the Australian Coral Core Archive, is one of the world's largest collections of cores from massive corals sourced from locations ranging from the Southern GBR across northern Australia to the Houtman-Abrolhos Islands in Western Australia. These cores contain an extraordinary wealth of climate and environmental data. The 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. The core archive is housed in a new North Wing Research Workshop and office complex at AIMS Townsville, which was opened in October 2012 and named the Ian Poiner wing, after the former AIMS CEO.

Graduate training and teaching

AIMS is committed to early-career research training to help develop the research and innovation capacity needed to meet the opportunities and challenges facing the marine environment, and to keep Australia globally competitive. AIMS maximises its impact through a number of joint ventures.

Postdoctoral studies

Twenty seven postdoctoral fellows were working at AIMS at the end of the reporting period co-funded through the ARC Super Science Fellowships, NERP and partnerships such as the IOMRC and NAMRA.

The IOMRC partnership has led to the recruitment of six fellows from around the world to investigate critical topics for understanding the marine environment along the Western Australian coastline.

Likewise, NAMRA focuses on postdoctoral fellowships and PhD scholarships; and the relationship with the ARC CoECRS involves provision of several principal investigators as well as salary support for two postdoctoral fellows.

AIMS' involvement in early-career researcher training is reflected in the fact that 24 staff members hold adjunct academic appointments at Australian and/or international institutions. These include JCU (primarily within the ARC CoECRS); UQ; UWA; CDU; QUT; Deakin and Swinburne Universities; the Bermuda Institute of Ocean Sciences; Dalhousie University and University of Windsor (Canada); and, University of Auckland and Victoria University (New Zealand).

Most of these adjunct positions reflect a large personal contribution to postgraduate supervision.

AIMS@JCU

AIMS@JCU—a joint venture between AIMS and JCU—was created in 2004 to administer a special allocation of Australian Government funds to facilitate the sharing of research infrastructure in Townsville and to provide enhanced opportunities for the training of postgraduate students in tropical marine sciences.

In 2012-2013, the new AIMS@JCU Strategic Alliance Agreement was executed, providing certainty around operational terms of reference and funding arrangements and placing the focus on the PhD scholarships more firmly on quantitative marine science. An AIMS staff member, Libby Evans-Illidge, has taken on the role of Research Director for the venture.

Four four-year PhD scholarships are offered each year—the students enrol at JCU and are co-supervised by JCU and AIMS staff. The additional year (on top of a standard three-year scholarship) allows each postgraduate student to complete 120 hours of professional development, some of which may need to be undertaken interstate.

AIMS@JCU currently has 169 members, of which 70 are JCU postgraduate and undergraduate students co-supervised by an AIMS staff member. Twenty-four of these students are recipients of an AIMS@JCU scholarship.

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

Postgraduate studies

AIMS staff members supervised 68 postgraduate students during 2012-2013, comprising:

- 19 at AIMS Townsville
- 7 at UWA Oceans Institute
- 42 working externally at their respective universities.

During the reporting period, there were 29 completions, which included five at overseas universities.

	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
AIMS science staff enrolled in postgraduate studies	6	3	2	1	0
Students working at AIMS supervised by AIMS staff	44	26	28	29	26
Students working externally supervised by AIMS staff	45	48	46	45	42

Awards to postgraduates

The following postgraduate students won awards in 2012-2013:

- Joseph Pollock won a GBRMPA Science for Management Award and an Australian Academy of Technological Sciences & Engineering Young Science Ambassador Awards.
- Jeroen van de Water won a GBRMPA Science for Management Award.
- Allison Paley won an Australian Academy of Technological Sciences & Engineering Young Science Ambassador Awards.

Occupational trainees

AIMS supported 13 occupational trainees, mostly from countries in south-east Asia who spend time at AIMS learning particular technical skills, such as laboratory procedures.

	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Occupational trainees	14	9	15	18	13

Communication skills development

Dr Line Bay organised an AIMS@JCU heat of the UQ Three Minute Thesis (3MT®) competition in September 2012. The event, which helps to develop communication skills by testing competitors' capacity to explain their work in three minutes to a non-specialist audience, attracted nine entrants in three categories: PhD Student (won by Gergely Torda), Early Career (Dr Karen Weynberg) and Established Researcher (Dr David Bourne).

Effective Use of Resources

Milestone completion

AIMS uses a centralised Milestone Reporting System to ensure it remains on track to deliver on its research to stakeholders and end-users. The nature and timing of milestones are agreed between AIMS and external clients and partners. Regular scrutiny of these milestones provides an early warning of any potential delays, ensuring that measures, such as resource reallocation, can be implemented when necessary to maximise the likelihood of timely delivery. If delays beyond the control of all parties concerned are expected despite all reasonable efforts, the milestone is renegotiated with external clients and partners.

Ninety-eight per cent of AIMS' external contract milestones were completed on time. Setbacks which could not be mitigated were due to bad weather such as tropical cyclones, infrastructure damage or other constraints beyond staff control such as delayed delivery by collaborators and/or suppliers. In all cases, acceptable alternative arrangements were successfully negotiated with the external party.

Continuous improvement

AIMS updated its management systems for Australian Quarantine and Inspection Service (AQIS)—permitted samples. The management data has been transferred to a modern laboratory and freezer management software system, which is accessible from our three working sites (Townsville, Darwin and Perth).

AIMS introduced more sophisticated tracking and auditing of all hazardous chemicals throughout their life in AIMS' possession.

AIMS implemented modern multi-function computer systems to improve performance and reduce maintenance and information update costs, which enabled AIMS to decommission over 30 legacy computerised systems.

Improved on-line display of AIMS metadata records has contributed to a 300% increase in the usage of the metadata by internal and external parties.

Marine Operations

All vessel operations were reviewed in the lead up to the new National System for Commercial Vessel Safety (NSCVS) to ensure compliance and identify further opportunities to introduce efficiencies. Accordingly, AIMS developed a strategic plan for its small vessels. The plan includes replacement strategies for the current fleet, taking into consideration NSCVS requirements, current and future utilisation, range of operation and functional needs. AIMS reached agreement with its vessel management contractors to introduce computerised maintenance management systems on the RV *Cape Ferguson* and RV *Solander*. This will facilitate benchmark performance in vessel maintenance planning, operation and audit capability.

The RV *Solander* achieved certification against the Offshore Vessel Inspection Database (OVID) standards, which is the standard certification utilised by the major oil and gas companies operating in the north-west of Australia. This certification streamlines the field operations approvals process with new oil and gas clients.

AIMS scientists conducted 163 field trips during the 2012–2013 financial year; many using AIMS vessels. Eighty trips involved diving and snorkelling, with a total of 3,816 scuba and surface supply breathing apparatus (SSBA) dives undertaken.

The AIMS vessels undertook the following trips during the reporting period:

RV <i>Solander</i>	20 research trips; 272 days in the field; steamed approx. 26,770 nautical miles
RV <i>Cape Ferguson</i>	23 research trips; 265 days in the field; steamed approx. 16,052 nautical miles
RV <i>Apollo</i>	25 research trips; 26 days in the field
RV <i>Aquila</i>	5 research trips; 12 days in the field
RV <i>Capricornus</i>	No trips—currently in storage.



AIMS Tropical Marine Research Facilities Project (ATMRFP)

Australian Government infrastructure funding has enabled AIMS to expand its research facilities:

- The construction at Cape Ferguson of SeaSim, along with new facilities to house AIMS' Tropical Marine Collections, provides an unprecedented ability to extend understanding of the impacts of climate change and ocean acidification. New berthing facilities for AIMS' research vessels have recently been commissioned in Townsville.
- Enhanced facilities, including a new research aquarium building, at the ATRF will enable more joint research with AIMS' Northern Territory-based collaborators, under the banner of NAMRA.

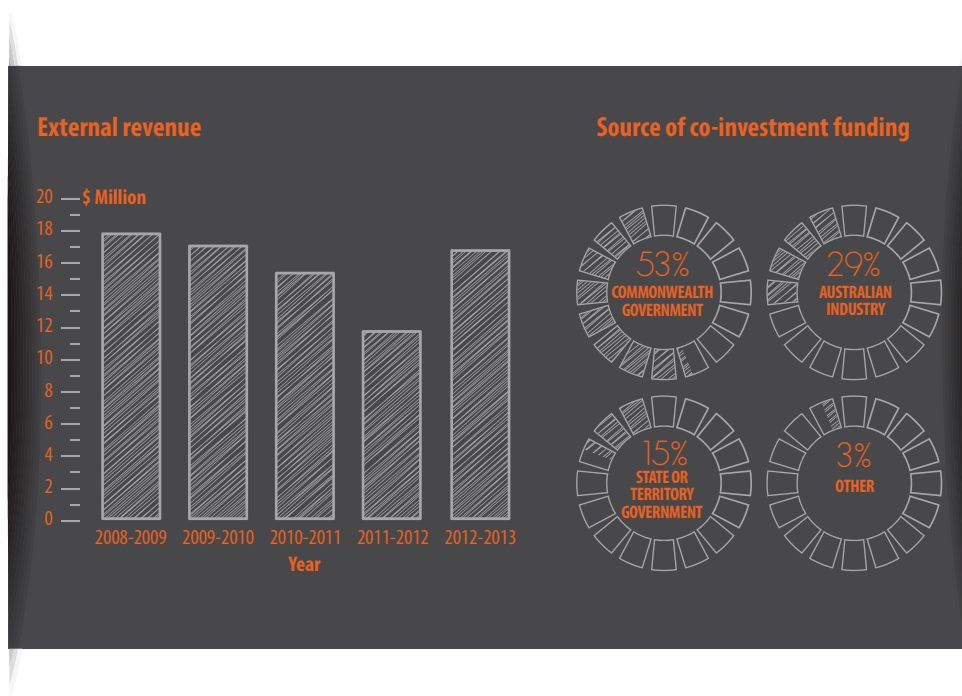
Revenue

Total revenue from government and external sources in 2012-2013 was \$51.7 million, representing an increase of \$3.4 million (7%) on 2011-2012 results. The increase was mainly due to securing additional non-appropriation revenue from the industry sector in Western Australia. In 2012-2013, non-appropriation funds amounted to \$20.2 million, or 39% of the total revenue, up from 35% the previous year.

Under the 2013 Budget, the Australian Government provided \$30.9 million over four years to increase the base level funding for AIMS to meet the increasing cost of marine research. This funding will greatly assist in alleviating the ever-increasing pressures of rising costs over the next four years, however, it remains increasingly important for AIMS to secure funding from external parties to continue its research.

External revenue

External revenue generated from research projects amounted to \$16.9 million in 2012-2013, which represented 33% of AIMS' total revenue. This compares with \$12.4 million (26% of total revenue) the previous year. The significant increase in external revenue was mainly due to a 29% increase in co-investment by the Australian Government and a 60% increase in co-investment by Australian industry. More than half of AIMS' external revenue comes from major grants and project contracts from Australian Government departments and agencies. The first chart compares AIMS' external revenue over the last five years. The second chart shows the breakdown of government and industry funding for 2012-2013.



See Part Three (page 81) for AIMS' detailed financial statements.



IMOS sea glider capturing data in the North Coral Sea. Image: D. Wisdom

PART TWO: OUR ORGANISATION

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The SeaSim facility is an ocean laboratory intended for national and international marine scientists. Image: S. Clarke.

MANAGEMENT AND ACCOUNTABILITY



The Australian Institute of Marine Science (AIMS) has in place a comprehensive system of corporate governance practices designed to provide control, disclosure and accountability of its activities.

Role and legislation

AIMS' roles are to carry out research and development in marine science and technology and to encourage and facilitate the non-commercial and commercial application of the results arising from such activities. In doing so, AIMS operates in accordance with the Public Research Agency Charter¹⁶ signed by the Minister and the AIMS Council in 2008. The Charter guides AIMS and its researchers when engaging in public debate on a broad range of topics, including change and the impact of global change on the marine environment.

AIMS is a Commonwealth statutory authority established by the *Australian Institute of Marine Science Act 1972* (AIMS Act). AIMS' functions and powers are set out in sections 9 and 10 of the Act (and shown in Appendix 1). The *Commonwealth Authorities and Companies Act 1997* (CAC Act) sets out reporting, accountability and other rules for AIMS' operations, management and governance. The Senate Economics Legislation Committee has found that AIMS has met its reporting requirements. This Annual Report has been produced in accordance with the *Commonwealth Authorities (Annual Reporting) Orders 2011*.

Responsible Minister

As at 30 June 2013¹⁷ the responsible ministers were the Hon Dr Craig Emerson (MP), Minister for Tertiary Education, Skills, Science and Research, and Senator the Hon Don Farrell, Minister for Science and Research.

Other responsible Ministers during the 2012–2013 financial year reporting period were Senator the Hon Christopher Evans, Minister for Tertiary Education, Skills, Science and Research (14 December 2011 to 4 February 2013), and the Hon Chris Bowen MP, Minister for Tertiary Education, Skills, Science and Research (from 4 February 2013 to 25 March 2013).

¹⁶ <http://www.innovation.gov.au/Science/Pages/Library%20Card/CharterAIMS.aspx>

¹⁷ Prime Minister Kevin Rudd was sworn on 27 June 2013. The new Rudd Ministry was sworn in on 1 July 2013 with Senator the Hon Kim Carr as Minister for Innovation, Industry, Science and Research, and Minister for Higher Education

Ministerial directions and statutory requirements

No new Ministerial directions were received during the reporting period.

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.

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
- Commonwealth Procurement Guidelines as they apply to AIMS.

AIMS participated in consultation processes relating to arrangements for engagement between Commonwealth bodies and the Parliamentary Budget Office and the Australian Government's Protective Service Policy Framework. These processes, which may lead to the making of General Policy Orders, were ongoing as of 30 June 2013.

AIMS did not form, or participate in the formation of, any new companies, trusts or partnerships; nor were there any changes to AIMS' enabling legislation during the reporting period. The Australian Tropical Marine Research Facilities Project (ATMRFP), a major infrastructure investment by the Australian Government, continued during 2012-2013.

In accordance with Senate Standing Order 25 (20), AIMS Annual Report 2011-2012 was submitted for review by the Senate Economics Legislation Committee. In its document "Annual Reports (No. 1 of 2013)" dated March 2013, the Committee confirmed that AIMS had met its 2011-2012 reporting requirements under the CAC Act.

CORPORATE GOVERNANCE



The Australian Institute of Marine Science (AIMS) is governed by a Council that reports to the relevant Minister.

Role of Council

The AIMS Council sets AIMS' key objectives and research strategies and oversees AIMS' management. The Council regularly advises the Minister and the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education of AIMS' progress against the four-year Research Plan. The Minister is also provided with advice on developments of significance, as appropriate.

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

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

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

During 2012-2013 AIMS met all CAC Act requirements. The AIMS Audit Committee was responsible for monitoring financial risks and making recommendations to Council. Internal auditors carried out quarterly reviews of various functions within AIMS. AIMS management and the Audit Committee assisted Council in ensuring that AIMS complied with the requirements of the CAC Act.

Council members

The AIMS Council consists of a Chairperson, AIMS' Chief Executive Officer, a member nominated by James Cook University (JCU), and four other members. All members of Council, with the exception of the Chief Executive Officer, are non-executive appointments made by the Governor General on the nomination of the Minister. Appointments can be up to five years and re-appointment is permissible. The Chief Executive Officer is appointed by the Council for a period not exceeding five years and is eligible for re-appointment.

Mr Wayne Osborn

Council Member and Chair: current term 1 January 2010 – 31 December 2014

Wayne Osborn retired as Chairman and Managing Director of Alcoa of Australia Ltd in February 2008. He was a vice president of Alcoa Incorporated, elected by the company's board of directors in November 2006. Wayne started his career in telecommunications and moved to the iron ore industry in the mid-1970s. He joined Alcoa in 1979 and worked in a variety of roles and locations across the Australian business sector including accountability for Alcoa's Asia Pacific operations prior to being appointed Managing Director in 2001. 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. Mr Osborn has an interest in whale conservation and wildlife photography. He was elected an International Fellow of the New York-based Explorers club in 2004. His work in support of the arts through the Australian Business Arts Foundation was recognised with the 2007 Business Leader Award at the Western Australia Business and the Arts Partnership Award.

Mr John Grace, BSc, FTSE, FAICD

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 Philip 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 TechAdvisory Pty Ltd which offers services in research planning and commercialisation. He is Chair of ITEK Ventures Pty Ltd the commercial arm of the University of South Australia; in addition he is a Director of the CRC for Polymers and a director of the Trans Tasman Commercialisation Fund. 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: Vice President of the Academy of Technological Sciences and Engineering, AMRAD Corporation Ltd, CRC for Cellular Growth Factors, Chair of the 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 runs a corporate

advisory business advising on corporate strategy, governance, audit and risk. She is currently the Chair and Member of various Commonwealth Audit and Risk Committees. 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). Ms Montano was awarded the Centenary Medal in recognition of her services to the Commonwealth.

Mr Nicholas Mathiou, BCom(Hons), LLB, MMktg

Council Member: 1 September 2005 – 31 August 2013

Mr Mathiou, who is currently Chair of the AIMS Audit Committee, has over 24 years of professional investment, transaction and corporate advisory experience with particular emphasis on private equity investment in emerging enterprises. 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, a member of Certified Practising Accountants Australia and a member of the Australian Institute of Company Directors.

Professor Sandra Harding, BSc(Hons), MPubAdmin, PhD, Hon Doc, FACE, FQA, FAICD, FAIM

Council Member: 10 May 2007 – 9 May 2015

Professor Sandra Harding was appointed Vice-Chancellor and President of James Cook University in January 2007. In this role, she is responsible for ensuring clear and effective leadership and management of the University across all operating sites, including campuses in Townsville, Cairns and Singapore.

Professor Harding has extensive academic and academic leadership experience. An economic sociologist by training, her areas of enduring academic interest include work, organisation and markets and how they work. She also has a keen interest in public policy, particularly education policy and other policy domains affecting higher education.

Professor Harding has undertaken a wide variety of external roles within the business community and the higher education sector. Her current roles include: Chair of Universities Australia; Director of Regional Australia Institute; Director of North Queensland Cowboys NRL club; Member of the Defence Science and Technology Organisation (DSTO) Advisory Board; the ARC Advisory Council; Director of Townsville Enterprise and of Advance Cairns (regional economic development bodies).

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

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 Dr Fisher was Vice-President at CRA International and then CEO of Concept Economics. Prior to heading up ABARE,

Dr Fisher 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. Dr Fisher has been the government board member on a number of statutory corporations. Brian has published over 270 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 Dr Fisher 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 and a DScAgr from the University of Sydney.

Mr John Gunn, BSc(Hons)

Council Member: 28 November 2011 – 27 November 2016

Mr Gunn is the Chief Executive Officer of AIMS. He has significant experience in leading development of strategy, scientific research and capability, and stakeholder engagement across a research portfolio encompassing marine ecology, fisheries, coastal systems, physical and chemical oceanography, atmospheric chemistry and climate science. Mr Gunn joined AIMS from the position of Chief Scientist of the Australian Antarctic Program, where he played a key role in developing the new Australian Antarctic Science Strategy Plan: 2011–2021. Prior to this, he was Deputy Chief of CSIRO's Marine and Atmospheric Research Division, the culmination of a 29-year career with CSIRO.

Mr Gunn has held a number of important advisory and policy development roles through his membership of the Scientific Steering Committee for the Global Ocean Observing System, the Australian Academy of Science National Committee for Antarctic Research, the Antarctic Climate and Ecosystems Co-Operative Research Centre Board, the Oceans Policy Science Advisory Group (OPSAG), the Commonwealth Government's High Level Coordination Group on Climate Change Science, and Australia's Integrated Marine Observing System Board.

Alongside his executive experience, Mr Gunn has an extensive academic record. Having graduated from JCU, Townsville, in 1978 with a first class honours in marine biology, he has authored over 150 peer-reviewed publications, book chapters, papers to international commissions and technical reports, and has presented at more than 100 conferences and symposia, in many instances as the keynote speaker. He has an international reputation in the fields of pelagic fish ecology and in the development of marine biological observing technology and systems.

Having worked within and led a number of world-leading, multidisciplinary teams and programs, Mr Gunn is a passionate advocate for science, and in particular marine science, and its role in securing a prosperous and sustainable future for Australia. While addressing the needs and demands of a broad user community, he is determined to maintain and further enhance the scientific excellence for which AIMS has gained an enviable international reputation.

Education and performance review processes for Council members

Council members are provided at their induction with a corporate governance manual and a copy of the CAC Act, which specify what is required of them. They are encouraged to undertake the Australian Institute of Company Directors (AICD) Company Directors Course and AIMS has funded this course for some Council members.

Council members' performance is reviewed regularly, alternately by the Chair and by an external reviewer.

Ethics

Council members sign a code of conduct that complies with Division 4 of the CAC Act. New Council members are briefed on the Code during induction. Council members abide by the *Code of Conduct for Directors* published by the Australian Institute of Company Directors.

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

	21 Aug 2012 Teleconf	3 Sep 2012 Perth	26 Nov 2012 Townsville	21 Mar 2013 Townsville	5 Jun 2013 Darwin
Mr Wayne Osborn	✓	✓	✓	✓	✓
Mr John Grace	✓	✓	✓	✓	✓
Ms Elizabeth Montano	✓	✓	✓	✓	✓
Mr Nicholas Mathiou	✓	✓	✓	✓	✓
Professor Sandra Harding	✓	✓	✓	✓	✓
Dr Brian Fisher	✓	✓	✓	✓	x
Mr John Gunn	✓	✓	✓	✓	✓

Audit Committee

The Audit Committee is a formal sub-committee of the Council that meets quarterly over the year. The 2012-2013 Audit Committee members were Mr Nicholas Mathiou (Chair), Ms Elizabeth Montano and an independent member, Mr Roy Peterson. AIMS Chief Executive Officer and Chief Finance Officer, and representatives of the Australian National Audit Office and Internal 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
- financial control framework
- external accountability
- legislative compliance
- internal audit
- external audit.

Audit Committee meetings

The table below gives the attendance of members and invitees. Four full meetings of the committee were held during 2012-2013. An additional two meetings, where the agenda focussed solely on development of AIMS' fraud control plan, were also held during the year. Attendance at the additional meetings was limited to Committee Members, the Chief Finance Officer and Finance Team Leader.

Members	Attended
Mr Nicholas Mathiou (Council Member and Chairman)	6
Ms Elizabeth Montano (Council Member)	6
Mr Roy Peterson (Independent Member)	6
Invitees	
Mr John Gunn (Council Member)	3*
Mr David Mead (AIMS General Manager)	1*
Mr Victor Bayer (Chief Finance Officer)	6
Mr Philip Clarke (Price Waterhouse Coopers)	4
Mr Chris King (HLB Mann Judd Internal Auditor)	3
Mr Ron Wah (Australian National Audit Office)	1
Mrs Pamela Giese (AIMS Finance Team Leader)	6

*David Mead represented John Gunn at one meeting

Independent professional advice

The Council has the right to obtain, at AIMS' expense, relevant independent professional advice in connection with the discharge of its responsibilities. They did not seek such advice in 2012-2013.

Financial risk management framework

The Audit Committee is responsible for setting AIMS' financial risk framework and monitoring management's compliance with that framework and making recommendations to Council. The Council is responsible for the 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. AIMS has reported its 2012-2013 fraud data to the Australian Institute of Criminology. A review of AIMS' Fraud Control Plan was undertaken during the year and a new plan was adopted by Council in June 2013. The AIMS Council and Management are unaware of any instances of fraud in 2012-2013.

Financial reporting

AIMS' financial statements are prepared in accordance with:

- Finance Minister's Orders for the reporting period ending on or after 1 July 2012

- 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 AIMS for the year ended 30 June 2013. There were no related entity transactions during financial years 2011-2012 or 2012-2013.

Internal audit

The Audit Committee reviews the internal audit plan for Council. Council approves the annual internal audit plan and receives regular reports on progress against the plan. The internal audit function was performed by HLB Mann Judd. The Internal Auditor is responsible for independently reviewing the financial risk 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

AIMS invested its surplus money in accordance with Section 18(3) of the CAC Act, and in accordance with AIMS' policy on 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.

Consultancy Services

AIMS did not seek the assistance of external consultants during the reporting period.

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

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 2012-2015 came into effect on 01 July 2012.

Customer service charter

The AIMS Service Charter for dealing with clients is posted on the website. AIMS 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>.

Freedom of Information

FOI Requests, Reviews, Decisions and Statements

There were no requests for documents received during the 2012-2013 FOI reporting period 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 2012-2013. No applications to the Administrative Appeals Tribunal for external review of decisions made under the FOI Act were received during 2012-2013. There were no reports on the operations of AIMS by the Auditor-General (other than on AIMS' Financial Statements), a parliamentary committee or the Commonwealth Ombudsman. No applications to amend records under the FOI Act were received during 2012-2013.

Agencies subject to the FOI Act are required to publish information to the public as part of the Information Publication Scheme (IPS). This requirement is in Part II of the FOI Act and has replaced the former requirement to publish a section 8 statement in an annual report. As per the requirements AIMS' IPS Agency Plan can be found on the AIMS' website.

FOI Operations

The documents listed in AIMS' IPS Agency Plan 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 in accordance with the relevant provisions of the FOI Act as supplemented and explained in the Fact Sheets and Guidelines published on the website of the Office of the Australian Information Commissioner (www.oaic.gov.au/publications). The grounds for assessment include considerations of commercial confidentiality, legal professional privilege and personal privacy (refer to the FOI Act and above website for details of these and other exemptions and conditional exemptions contained in the current legislation).

Requests for any such information must be made in writing, addressed to the relevant person, and must contain the information set out on pages 3 and 4 in Fact Sheet 6 on the above website. The request should be addressed to the Freedom of Information Officer, whose contact details are given below. There is no fee payable for the request. However fees and charges may apply and if they do will be set in accordance with Part 4 of the FOI Guidelines which are available from the above website.

Information Publication Scheme

AIMS continues to undertake actions consistent with compliance requirements under the Information Publication Scheme (IPS) introduced in May 2011 under the relevant provisions of the FOI Act. The objective of the IPS is the promotion of open, accountable and transparent information by governments and government agencies in formats that are easy to understand and freely accessible. AIMS' IPS Agency Plan is available on the AIMS' website at www.aims.gov.au/ips.

Contact information

All enquiries and requests for information or concerning access to documents or any other matters relating to FOI should be directed to:

Freedom of Information Officer
 Australian Institute of Marine Science
 PMB No 3, Townsville Mail Centre MC Qld 4810
 Telephone: (07) 4753 4444
 Facsimile: (07) 4772 5852
 Email: privacy@aims.gov.au

Risk management

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

Operational Risk Management (ORM) is established institute-wide, with processes, procedures and systems of work in place to manage health and safety risks that may affect AIMS workers. Continual improvement in Risk Management processes have resulted in the development and implementation of additional risk management tools, systems and procedures, and a strong focus on effective ORM.

Health and safety

AIMS understands its responsibilities under Schedule 2 of the *Work, Health and Safety Act 2011* and has focused on the ongoing implementation of the harmonised work health and safety legislation and proposed changes in maritime safety laws.

AIMS is committed to protecting the health and safety of its staff and visitors and recognises the importance of a providing a safe work environment, a robust and accessible Health and Safety Management System and an ongoing focus on the development of AIMS' safety culture.

AIMS holds that “safe science is good science” and that safety is a shared value embedded in everything we do. AIMS focuses on communication and empowerment, safety briefings, proactive hazard identification and incident reporting. All risks and hazards are assessed in line with the complexities of the research work, activities and supporting functions required.

AIMS fosters a “stop work and speak up” culture to ensure that all personnel feel comfortable to delay or stop work where an unacceptable risk may be present or develop.

AIMS management is committed to understanding and managing AIMS’ health and safety risk profile, and dedicates significant resources toward continual improvement projects and strategies.

Key areas of focus include:

- hazardous chemical management
- risk management
- AIMS Safety Management Systems improvement
- training and competence
- audit and inspection
- cultural development
- laboratory management.

AIMS’ commitment to the ongoing health and safety of all its workers is demonstrated through the number and diversity of roles, resources and training dedicated to health and safety management at AIMS. Roles include:

- two Health and Safety Officers
- Diving Officer (safety focus)
- Boating Officer (safety focus)
- 10 laboratory managers
- six Health and Safety Representatives and a Safety Committee
- Chief Emergency Warden, two Deputy Emergency Wardens and House Wardens
- advanced medical care professionals
- appointed first aid providers
- Harassment Contact Officers
- Quarantine Officer (statutory position)
- Radiation Safety Officer (statutory position)
- Biosafety Officer (statutory position)
- Fire Safety Advisor (statutory position)
- Cruise Leaders (field work)
- Return-to-Work and Rehabilitation Officer.

Recent training provided includes:

- hazardous materials and dangerous goods
- crane operations
- working at height
- elevated work platform operations
- first aid and advanced resuscitation
- elements of shipboard safety
- coxswains training and assessment
- rescue diver
- ADAS commercial diving accreditation
- site-specific inductions.

Incidents and hazard reporting

During 2012-2013, 138 potential safety reports were formally recorded in our incident management system, the majority of which (78) were hazards. Appropriate preventative actions were implemented, demonstrating a commitment to continuously improve safety at AIMS.

No incidents were notified to Comcare, the statutory authority with responsibility for occupational health and safety, compensation and rehabilitation for federal employees, under the requirements of Section 68 of the *Occupational Health and Safety Act 1991* in relation to dangerous occurrences.

There were no workers' compensation claims under the Comcare Workers' Compensation Scheme and no Comcare investigations during the reporting period.



Towed video camera, being launched from the stern of RV Solander off NW Australia. Image: S. Clarke



AIMS researchers study coastal and marine environments, water quality and ecosystems. Image: S. Clarke.

ENVIRONMENTAL PERFORMANCE



Environment protection, biodiversity conservation and ecologically sustainable development

In its 40-year history the Australian Institute of Marine Science (AIMS) has demonstrated an extensive commitment to environmental protection and biodiversity conservation. AIMS has 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 under its control.

As AIMS holds the current Chair and Secretariat of the Oceans Policy Science Advisory Group, AIMS plays a critical role in advising the Australian Government on the best way forward for the management of Australia's marine environment.

AIMS contributes to ecologically sustainable development (ESD) through its research activities and operations. For example, AIMS leads the scientific monitoring program associated with development of liquefied natural gas resources in north-west Australia and is providing advice on issues such as dredging and sustainable ports development for Western Australia, Northern Territory and Queensland.

AIMS' researchers provide critical science to Australian, state and territory governments on issues such as water quality and biodiversity assessment, providing data, analysis and models, which contribute to the management of the Great Barrier Reef (GBR). They help form a framework for the management of agriculture and urban run-off to 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*, AIMS has vessels and staff who are able to provide emergency advice and assessment in order to mitigate the impacts of these accidents.

Reducing AIMS' environmental impacts

The green@AIMS program, which commenced in 2008, continues to deliver energy efficiencies for AIMS. The energy monitoring system commissioned in June 2010 has established consumption baselines and trends, which allows targeted energy reduction programs and initiatives.

Construction of an off-peak chilled water plant, a component of the AIMS Tropical Marine Research Facilities Project (ATMRFP), was completed in June 2012. Predicted electricity savings from the installation of new air conditioning chillers that are 40% more efficient than those used previously have been confirmed. However, commissioning issues with the thermal energy storage tank have delayed benefits associated with moving electrical demand for air conditioning into off-peak periods.

Other energy efficiency initiatives that have been implemented in 2012-2013 include replacing electric hot water units with solar systems in all on-site accommodation at Cape Ferguson, and the ongoing roll-out of low energy lighting throughout all work areas. New infrastructure is being designed with energy efficiency as a priority with the new North Wing office and laboratory complex at Cape Ferguson meeting the National Australian Built Environment Rating System (NABERS) 6.0 energy rating.

As well as focusing on step change improvements in electricity consumption, AIMS continues to promote energy efficiency amongst the workforce.

AIMS operates a well established car-pooling program whereby staff are provided with access to shared vehicles. Approximately 91% 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 CO₂ emissions generated by employee travel to and from the workplace is considered leading practice.

Water usage

2012-2013 water use was 70.1 megalitres (ML), an increase from 54 ML in 2011-2012. The increase was due to re-filling of the chiller storage tank, condenser cooling towers operating continuously and irrigation to establish the new infrastructure landscaping.

Recycling

AIMS aligns itself with the Australian Packaging Covenant (APC) Action Plan of 2007 and reported on waste statistics this year to APC 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

AIMS reports energy usage data in October each year via the Department of Climate Change and Energy Efficiency Online System for Comprehensive Activity Reporting (OSCAR). In 2011-2012 AIMS used 52.69 terajoules of energy across all sites and activities, a 10% reduction on 2010-2011 energy use.

AIMS' total electricity consumption has reduced from 6.982 gigawatts (GW) for 2010-2011 to 6.850 GW in 2011-2012 and to 6.662 GW in 2012-2013. However, electricity consumption is likely to increase in 2013-2014 due to the electricity demands of the National Sea Simulator.

Radiation safety

AIMS 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 quarterly reporting, maintenance of a source inventory and compliance with relevant regulations, codes and standards.

Gene technology

No new proposals for dealing with a genetically modified organism (GMO) were assessed by AIMS' Biosafety Committee in 2012-2013, and four exempt projects were completed. With projects on-going from previous years, AIMS now has one licenced GMO project, seven GMO projects that are defined by the Office of the Gene Technology Regulator as NLRDs (Notifiable Low Risk Dealing), and seven defined as exempt.



SeaSim will enable AIMS researchers to conduct experiments to assess the impact of pollutants and dredge spoil on tropical systems. Image: John DeRooy.



The latest technology and a high level of expertise in marine science at AIMS attracts students and scientists from around the country and internationally. Image: S. Clarke.

STAFF



Staffing and structure

The average full-time equivalent (FTE) value was 198 over the 12 month period. All members of staff are employed under the *AIMS Act*. In addition to those paid from Australian Government appropriation, AIMS periodically employs staff to work on projects funded from external sources.

The work of the research staff is supported by a variety of professional research support staff skilled in laboratory services, data management, commercial services, intellectual property portfolio management, engineering services, field operations, information technology, information services and science communication. Corporate support staff deliver financial, human resource, supply and property, and general management services. The Executive Management Group is made up of the CEO, General Manager, and Research Director.

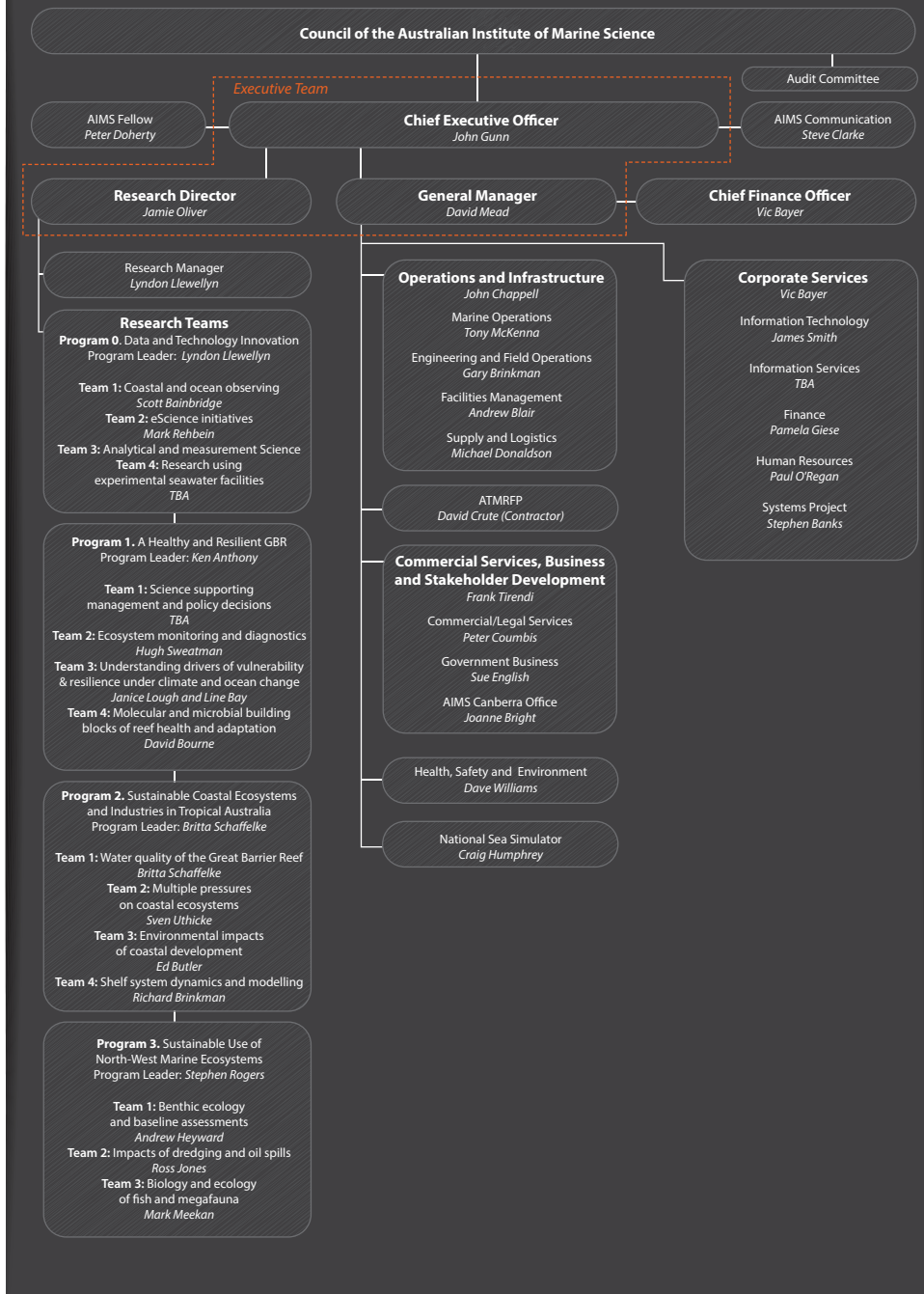
The following tables provide a breakdown of staff numbers and EEO status by FTE over the 12 months to 30 June 2013 (2012 figures in brackets):

	Female	Male	Total
Research Scientists	18 (17)	30 (28)	48 (45)
Research Support	20 (20)	44 (44)	64 (64)
Technical and corporate support	28 (32)	58 (56)	86 (88)
Total Staff	66 (69)	132 (128)	198 (197)

AIMS' staff fitted the following EEO status profile (2012 figures in brackets).

Aboriginal and Torres Strait Islander	0.5% (0.5%)
Non English speaking background	17.6% (17.5%)
Staff with disability	1.5% (1.5%)
Women	33.2% (35.5%)

Organisational Structure of the Australian Institute of Marine Science



Staffing Policies

Staff consultation

Staff consultation and communication takes place via a range of mediums such as all-staff meetings, emails and newsletters. The Joint Consultative Committee, comprising AIMS CEO (Chair), a management representative, the Human Resources Manager, a Community and Public Sector Union (CPSU) representative (internal), a CPSU organiser (external), and a staff representative, met four times in 2012-2013. This committee provides a forum for discussion and consultation between management and staff representatives.

Equal employment opportunity 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' staffing policies and procedures align with the requirements of the *Equal Employment Opportunity (Commonwealth Authorities) Act 1987*. Designed to ensure that workplace diversity and equality of opportunity are fundamental operating principles for AIMS, they include:

- regularly reviewing employment policies and practices and taking steps to implement ongoing instruction for user groups
- promoting AIMS as an equal opportunity employer in all recruitment advertisements placed in the print media and on AIMS' website
- supporting equity of access and providing amenities for people with disabilities in AIMS' public access facilities such as conference rooms, theatre, library, canteen and display areas
- constructing new facilities that support equity of access
- catering to those with a disability, and providing a wheelchair if required, on public tours of AIMS
- putting mechanisms in place to handle complaints and grievances (formal and informal) to address issues and concerns raised by staff and visitors.

Women in science

The goal of the Women@AIMS Reference Group is to promote diversity and equity within the organisation. The group formed in 2009 and seeks opportunities for creating a flexible and family friendly work environment. In particular it identifies issues and barriers that are specific to women in the workplace and aims to provide solutions. Originally this was a focus group for AIMS' female scientists, but in late 2010 it was modified to include all women at AIMS.

The group has recently established a personal coaching and empowerment program for women at AIMS. It is intended that, if the program proves a success, it will be made available for all staff in 2014.

Code of Conduct

AIMS has a Code of Conduct to which the Council, management, staff, and medium-term 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 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 accordance with the AIMS Code of Conduct, staff are required to treat others with courtesy, respect, dignity, fairness and equity and to have concern for their rights, freedoms and individual needs. A high standard of behaviour is expected and AIMS has a set of principles outlining the way staff are expected to behave towards others.

Workplace Harassment Contact Officers throughout AIMS are available to discuss, in confidence, matters of concern regarding harassment and associated issues raised by a staff member. In 2012-2013 AIMS had no formal reported cases of harassment.

Disability strategy

AIMS is committed to ensuring people with disabilities are given opportunities for independence, access and full participation. AIMS 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 AIMS 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 AIMS to provide an independent Employee Assistance Program (EAP). The EAP is free to staff, their family members and authorised visitors and provides for up to ten sessions to assist with an issue in the following areas:

- relationship and family problems
- maximising personal potential and/or 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 or elsewhere
- coping skills in dealing with a range of pressures.

Participants can refer themselves or be encouraged by a colleague, a supervisor, human resource staff or occupational health and safety staff to access the program. Fourteen staff (4.3%) accessed the counselling service during the reporting period, a decrease on the previous year (7.6%). A further dissection reveals that staff accessed the service primarily for issues of a personal nature.

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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 2013, which comprise: a Statement by the Directors, Chief Executive 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; 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 is necessary to enable the preparation of the financial statements that give a true and fair view and 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 Australian Institute of Marine Science'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 Australian Institute of Marine Science'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.

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

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

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 2013 and of its financial performance and cash flows for the year then ended.

Australian National Audit Office



Ron Wah
Audit Principal

Delegate of the Auditor-General

Canberra
21 August 2013

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

In our opinion, the attached Financial Statements for the year ended 30 June 2013 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



Mr Wayne Osborn
Chairman
21 August 2013

Signed



Mr John Gunn
Chief Executive Officer
21 August 2013

Signed



Mr Victor Bayer
Chief Finance Officer
21 August 2013

STATEMENT OF COMPREHENSIVE INCOME*for the period ended 30 June 2013*

	Notes	2013 \$'000	2012 \$'000
EXPENSES			
Employee benefits	3A	22,847	22,966
Supplier	3B	18,667	17,784
Depreciation and amortisation	3C	8,537	7,910
Finance costs		-	1
Foreign exchange losses		22	1
Losses from asset sales	3D	86	128
Total expenses		50,159	48,790
LESS:			
OWN-SOURCE INCOME			
Own-source revenue			
Sale of goods and rendering of services	4A	16,971	12,435
Interest	4B	2,623	4,308
Other revenue	4C	461	224
Total own-source revenue		20,055	16,967
Gains			
Sale of assets	4D	155	72
Total gains		155	72
Total own-source income		20,210	17,039
Net cost of services		29,949	31,751
Revenue from Government	4E	31,484	31,245
Total revenue from Government		31,484	31,245
Surplus / (Deficit)		1,535	(506)
OTHER COMPREHENSIVE INCOME			
Changes in asset revaluation surplus		1,361	11,652
Total other comprehensive income		1,361	11,652
Total comprehensive income		2,896	11,146

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

BALANCE SHEET*as at 30 June 2013*

	Notes	2013 \$'000	2012 \$'000
ASSETS			
Financial Assets			
Cash and cash equivalents	5A	5,302	335
Trade and other receivables	5B	3,812	6,415
Other investments	5C	33,400	59,345
Total financial assets		42,514	66,095
Non-Financial Assets			
Building and leasehold improvements	6A,C	82,269	67,498
Infrastructure, plant and equipment	6B,C	75,362	65,606
Intangibles	6D,E	2,446	2,165
Inventories	6F	157	156
Other	6G	349	285
Total non-financial assets		160,583	135,710
Total assets		203,097	201,805
LIABILITIES			
Payables			
Suppliers	7A	(2,739)	(5,106)
Other payables	7B	(4,575)	(4,409)
Total payables		(7,314)	(9,515)
Non-Interest Bearing Liabilities			
Loans	8A	(1,500)	(1,500)
Total non- interest bearing liabilities		(1,500)	(1,500)
Provisions			
Employee provisions	9A	(8,667)	(8,070)
Total provisions		(8,667)	(8,070)
Total liabilities		(17,481)	(19,085)
Net assets		185,616	182,720
EQUITY			
Contributed equity		86,607	86,607
Reserves		67,699	66,338
Retained surplus		31,310	29,775
Total equity		185,616	182,720

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

STATEMENT OF CHANGES IN EQUITY
for the period ended 30 June 2013

	Retained earnings		Asset revaluation surplus		Contributed equity/capital		Total equity	
	2013 \$'000	2012 \$'000	2013 \$'000	2012 \$'000	2013 \$'000	2012 \$'000	2013 \$'000	2012 \$'000
Opening balance								
Balance carried forward from previous period	29,775	30,281	66,338	54,686	86,607	85,607	182,720	170,574
Adjusted opening balance	29,775	30,281	66,338	54,686	86,607	85,607	182,720	170,574
Comprehensive income								
Other comprehensive income	-	-	1,361	11,652	-	-	1,361	11,652
Surplus (Deficit) for the period	1,535	(506)	-	-	-	-	1,535	(506)
Total comprehensive income	1,535	(506)	1,361	11,652	-	-	2,896	11,146
Contributions by owners								
Equity injection	-	-	-	-	-	1,000	-	1,000
Sub-total transactions with owners	-	-	-	-	-	1,000	-	1,000
Closing balance as at 30 June	31,310	29,775	67,699	66,338	86,607	86,607	185,616	182,720

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

CASHFLOW STATEMENT*for the period ended 30 June 2013*

	Notes	2013 \$'000	2012 \$'000
OPERATING ACTIVITIES			
Cash received			
Receipts from Government		31,484	31,245
Sales of goods and rendering of services		20,633	19,272
Interest		3,062	4,558
Net GST received		3,430	3,012
Other		461	224
Total cash received		59,070	58,311
Cash used			
Employees		(22,112)	(22,114)
Suppliers		(26,021)	(19,526)
Total cash used		(48,133)	(41,640)
Net cash from operating activities	10	10,937	16,671
INVESTING ACTIVITIES			
Cash received			
Proceeds from sales of property, plant and equipment		529	264
Total cash received		529	264
Cash used			
Purchase of property, plant and equipment		(32,444)	(34,766)
Transfer of funds to investments	10	(33,400)	-
Total cash used		(65,844)	(34,766)
Net cash used by investing activities		(65,315)	(34,502)
FINANCING ACTIVITIES			
Cash received			
Contributed equity		-	-
Total cash received		-	-
Net cash from financing activities		-	-
Net increase (decrease) in cash held		(54,378)	(17,831)
Cash and cash equivalents at the beginning of the reporting period		59,680	77,511
Cash and cash equivalents at the end of the reporting period	5A,C	5,302	59,680

SCHEDULE OF COMMITMENTS

as at 30 June 2013

	2013 \$'000	2012 \$'000
BY TYPE		
Commitments receivable		
Buildings	-	-
Insurance claims	672	826
Net GST recoverable on commitments ¹	2,969	5,963
Total commitments receivable	3,641	6,789
Commitments payable		
Capital commitments		
Building and Leasehold improvements ²	(3,690)	(18,672)
Infrastructure, plant and equipment ³	(3,004)	(15,661)
Total capital commitments	(6,694)	(34,333)
Other commitments		
Operating lease ⁴	(258)	(260)
Other ⁵	(25,704)	(31,007)
Total other commitments	(25,962)	(31,267)
Total commitments payable	(32,656)	(65,600)
Net commitments by type	(29,015)	(58,811)
BY MATURITY		
Commitments receivable		
Capital commitment income		
One year or less	1,131	5,963
From one to five years	150	-
Over five years	-	-
Total capital commitments	1,281	5,963
Other commitment income		
One year or less	1,395	826
From one to five years	949	-
Over five years	16	-
Total other commitment income	2,360	826
Total commitments receivable	3,641	6,789
Commitments payable		
Capital commitments		
One year or less	(5,044)	(31,446)
From one to five years	(1,650)	(1,650)
Over five years	-	(1,237)
Total capital commitments	(6,694)	(34,333)
Operating lease commitments		
One year or less	(50)	(30)
From one to five years	(208)	(230)
Total operating lease commitments	(258)	(260)

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

SCHEDULE OF COMMITMENTS (cont'd)*as at 30 June 2013*

	2013	2012
	\$'000	\$'000
Other Commitments		
One year or less	(15,291)	(15,351)
From one to five years	(10,233)	(15,656)
Over five years	(180)	-
Total other commitments	(25,704)	(31,007)
Total commitments payable	(32,656)	(65,600)
Net commitments by maturity	(29,015)	(58,811)

Footnotes:

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 at the University of Western Australia.
3. Purchase orders for the construction of the Great Barrier Reef Ocean Observing System, scientific equipment and vehicles.
4. Operating lease refers to Port of Townsville Ltd land and water leases and franking machine.
5. Purchase orders for scientific research, contractual obligations for support services and externally funded research.

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

SCHEDULE OF CONTINGENCIES*as at 30 June 2013*

	2013	2012
	\$'000	\$'000
Contingent assets		
Guarantees	319	441
Debt forgiveness	500	500
Insurance Claim	137	-
Total contingent assets	956	941

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

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

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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. It is a not for profit 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*.

The financial statements have been prepared in accordance with:

- Finance Minister's Orders (FMOs) for reporting periods ending on or after 1 July 2011
- 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 executory 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:

- i) *Fair value of buildings, plant and equipment*

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.

ii) *Remaining useful lives of buildings, infrastructure, plant and equipment*

The independent valuers have undertaken an assessment of the remaining useful lives of buildings, infrastructure, plant and equipment based on their condition and expected usage. The remaining useful lives have been reviewed and adopted by AIMS.

iii) *Recognition of revenue for rendering of services*

Revenue recognised for rendering of services is accounted for on a percentage completed basis which determines the timing of revenue recognition and amount of revenue recognition. The determination of the percentage of complete requires judgements in relation to determining the costs to date of the project, budgeted costs to complete and contract values including variations.

iv) *Impairment of trade receivables*

Collectability of trade receivables is reviewed on an ongoing basis. Debts which are known to be uncollectible are written off as an expense. An allowance account (provision for impairment of trade receivables) is used when there is objective evidence that AIMS will not be able to collect all amounts due according to the original terms of the receivables.

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

1.4 New Australian Accounting Standards

Adoption of new Australian Accounting Standard requirements

No accounting standard has been adopted earlier than the application date as stated in the standard.

Other new standards, revised standards, interpretations, amending standards that were issued prior to the sign-off date and are applicable to the current reporting period did not have a financial impact, and are not expected to have a future financial impact on the entity.

Future Australian Accounting Standard requirements

The following new standards, revised standards, interpretations, amending standards were issued by the Australian Accounting Standards Board prior to the sign-off date, which are expected to have a financial impact on the entity for future reporting periods:

- i) **AASB 119 Employee Benefits, AASB 2011-10 Amendments to Australian Accounting Standards arising from AASB 119(September 2011) and AASB 2011-11 Amendments to AASB 110 (September 2011) arising from Reduced Disclosure Requirements** (effective 1 January 2013)

In September 2011, the AASB released a revised standard on accounting for employee benefits.

The revised AASB 119 Employee Benefits introduces a single approach for the recognition and measurement of defined benefit plans.

Previously, entities were permitted a number of measurement options, including the ability to defer some gains/losses into future periods via the corridor approach. Service costs are recognised in the profit or loss, including past service costs arising from a plan amendment, curtailment or settlement. Financing income/expense is also recognised in the profit or loss depending on whether the overall plan is in a surplus or deficit position. Any return on plan assets in excess of the discount rate is recognised in other comprehensive income.

Disclosure requirements are also revised and include disclosure of fair value information for plan assets, sensitivity analysis for major assumptions and descriptions of the risks associated with the plan. The recognition rules and definitions related to termination benefits have been revised, which could impact when entities recognise termination expenses within their financial statements.

Short-term employee benefits are now defined as employee benefits that are expected to be settled wholly within twelve months after reporting date. Previously, short-term employee benefits were defined as employee benefits due to be settled within twelve months.

AASB 119 requires retrospective application, with limited exemptions for comparative information and previously capitalised employee costs

ii) AASB 10 Consolidated Financial Statements, AASB 11 Joint Arrangements, AASB 12 Disclosure of Interests in Other Entities, revised AASB 127 Separate Financial Statements and AASB 128 Investments in Associates and Joint Ventures and AASB 2011-7 Amendments to Australian Accounting Standards arising from the Consolidation and Joint Arrangements Standards (effective 1 January 2013)

In August 2011, the AASB issued a suite of five new and amended standards which address the accounting for joint arrangements, consolidated financial statements and associated disclosures.

AASB 10 replaces all of the guidance on control and consolidation in AASB 127 Consolidated and Separate Financial Statements, and Interpretation 12 Consolidation – Special Purpose Entities. The core principle that a consolidated entity presents a parent and its subsidiaries as if they are a single economic entity remains unchanged, as do the mechanics of consolidation. However the standard introduces a single definition of control that applies to all entities. It focuses on the need to have both power and rights or exposure to variable returns before control is present. Power is the current ability to direct the activities that significantly influence returns. Returns must vary and can be positive, negative or both. There is also new guidance on participating and protective rights and on agent/principal relationships. While the Australian Institute of Marine Science does not expect the new standard to have a significant impact on its composition, it has yet to perform a detailed analysis of the new guidance in the context of its various investees that may or may not be controlled under the new rules.

AASB 11 introduces a principles based approach to accounting for joint arrangements. The focus is no longer on the legal structure of joint arrangements, but rather on how rights and obligations are shared by the parties to the joint arrangement. Based on the assessment of rights and obligations, a joint arrangement will be classified as either a joint operation or joint venture. Joint ventures are accounted for using the equity method, and the choice to proportionately

consolidate will no longer be permitted. Parties to a joint operation will account their share of revenues, expenses, assets and liabilities in much the same way as under the previous standard. AASB 11 also provides guidance for parties that participate in joint arrangements but do not share joint control. AIMS is yet to evaluate its joint arrangements in light of the new guidance.

AASB 12 sets out the required disclosures for entities reporting under the two new standards, AASB 10 and AASB 11, and replaces the disclosure requirements currently found in AASB 128. Application of this standard by the Australian Institute of Marine Science will not affect any of the amounts recognised in the financial statements, but will impact the type of information disclosed in relation to the Australian Institute of Marine Science's investments.

AASB 127 is renamed Separate Financial Statements and is now a standard dealing solely with separate financial statements. Application of this standard by the Australian Institute of Marine Science will not affect any of the amounts recognised in the financial statements, but may impact the type of information disclosed in relation to the parent's investments.

Amendments to AASB 128 provide clarification that an entity continues to apply the equity method and does not remeasure its retained interest as part of ownership changes where a joint venture becomes an associate, and vice versa. The amendments also introduce a "partial disposal" concept. AIMS is still assessing the impact of these amendments.

AIMS does not expect to adopt the new standards before their operative date. They would therefore be first applied in the financial statements for the annual reporting period ending 30 June 2014.

iii) AASB 13 Fair Value Measurement and AASB 2011-8 Amendments to Australian Accounting Standards arising from AASB 13 (effective 1 January 2013)

AASB 13 was released in September 2011. It explains how to measure fair value and aims to enhance fair value disclosures. AIMS has yet to determine which, if any, of its current measurement techniques will have to change as a result of the new guidance. It is therefore not possible to state the impact, if any, of the new rules on any of the amounts recognised in the financial statements. However, application of the new standard will impact the type of information disclosed in the notes to the financial statements. AIMS does not intend to adopt the new standard before its operative date, which means that it would be first applied in the annual reporting period ending 30 June 2014.

iv) AASB 2012-5 Amendments to Australian Accounting Standards arising from Annual Improvements 2009-2011 Cycle (effective 1 January 2013)

The Standard clarifies that a balance sheet as at the beginning of the comparative period only needs to be presented where it is materially affected by a retrospective change resulting from an error, changed accounting policy or reclassification. When such a balance sheet is presented, notes to that balance sheet are not necessary, except as required by AASB 108 Accounting Policies, Changes in Accounting Estimates and Errors.

The Standard also clarifies that spare parts, stand-by equipment and servicing equipment are accounted for as property, plant and equipment whenever they meet the definition of property, plant and equipment in AASB 116 Property, Plant and Equipment. Otherwise, such items are classified as inventory. Spare parts and servicing equipment are no longer automatically treated as property, plant and equipment because they can be used only in connection with an item of property, plant and equipment.

Other amendments affect the disclosure of segment information in interim financial reports, tax-effect accounting for equity transactions and accounting by entities returning to reporting under Australian Accounting Standards.

v) AASB 9 Financial Instruments, AASB 2009-11 (effective 1 January 2013)

AASB 9 (as re-issued in December 2010) represents the first phase of a three phase process to replace AASB 139 Financial Instruments: Recognition and Measurement.

The amendments reduce the four categories of financial asset to two - amortised cost and fair value. Under AASB 9, assets are to be measured at fair value unless they are held to collect cash flows and solely comprise the payment of interest and principal on specified dates. Gains and losses on assets carried at fair value are taken to profit and loss, unless they are equity instruments not held for trading and the entity initially elects to recognise gains/losses in other comprehensive income.

The option to measure financial instruments at fair value through profit and loss remains, where this reduces an inconsistency.

AASB 9 requires the effect of any change in the entity's own credit risk, for financial liabilities designated at fair value, to be recognised in other comprehensive income, unless recognising in the profit and loss will address an accounting mismatch.

vi) AASB 2013-3 Amendments to AASB 136 – Recoverable Amount Disclosures for Non-Financial Assets (effective 1 January 2014)

The AASB has made small changes to some of the disclosures that are required under AASB 136 Impairment of Assets. These may result in additional disclosures if AIMS recognises an impairment loss or the reversal of an impairment loss during the period. They will not affect any of the amounts recognised in the financial statements. AIMS intend to apply the amendment from 1 July 2014.

1.5 Revenue

Revenue from the sale of goods is recognised when:

- the risks and rewards of ownership have been transferred to the buyer
- AIMS retains no managerial involvement or effective control over the goods
- the revenue and transaction costs incurred can be reliably measured
- 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
- 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. Where losses are anticipated they are provided for in full.

Receivables include trade receivables and contract works in progress based on stage of completion.

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*.

Revenue from Government

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

Sale of Assets

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 appropriated that are designated as 'equity injections' for a year are recognised directly in contributed equity in that year.

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 2012-2013, 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 "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.

Leave

The liability for employee benefits includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken in future years by employees of the 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 2013. 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

AIMS' staff 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.

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 in the Department of Finance and Deregulation's administered schedules and notes.

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. AIMS accounts for the contributions as if they were contributions to defined contribution plans.

The liability for the superannuation recognised as at 30 June 2013 represent outstanding contributions for the final pay of the year.

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
- 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
- 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' proportionate interests in the assets, liabilities and expenses of each joint venture activities have been incorporated in the financial statements under the appropriate headings.

AIMS@JCU Joint Venture

AIMS has an interest in the AIMS@JCU Joint Venture with James Cook University (JCU) to:

- increase research activities by the participants in determined programs
- 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' proportionate interests in the assets, liabilities and expenses of the joint venture activities have been incorporated in the financial statements under the appropriate headings.

Arafura Timor Research Facility Joint Venture

AIMS has an interest in the Arafura Timor Research Facility Joint venture with the Australian National University (ANU). AIMS has a 50% share. The purpose of the venture is to maintain a research facility in Darwin that will create a centre of excellence in the field of physical, chemical engineering, information and biological sciences with the capability of pursuing world class research and training in that field. ANU is responsible for managing the financial affairs of the joint venture.

AIMS' proportionate interests in the assets, liabilities and expenses of the joint venture activities have been incorporated in the financial statements under the appropriate headings.

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 restore to original condition. These costs are included in the value of the AIMS' leasehold improvements with a corresponding provision for the 'make good' recognised.

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

Revaluation adjustments are 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 are 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	2013	2012
Buildings and leasehold improvements	9 – 69 years	9 – 69 years
Plant and equipment	3 – 47 years	3 – 47 years
Computer equipment	3 – 28 years	3 – 28 years
Vehicles	3 – 20 years	3 – 20 years
Office equipment	4 – 56 years	4 – 56 years
Ships, launches and vessels	4 – 25 years	4 – 25 years
Library books	3 – 100 years	3 – 100 years

Impairment

All assets were assessed for impairment at 30 June 2013. 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 fair value 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 two to ten years (2011-2012: two to ten years).

All software assets were assessed for indications of impairment as at 30 June 2013.

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
- 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
- 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 no change in accounting policy in respect of transactions with the Government as owner.

Note 2: Events after the reporting period

AIMS is not aware of any material events that have occurred since balance date.

Note 3: Expenses

	2013 \$'000	2012 \$'000
Note 3A: Employee Benefits		
Wages and salaries	(17,298)	(15,921)
Superannuation:		
Defined contribution plans	(1,443)	(1,342)
Defined benefit plans	(1,366)	(1,227)
Leave and other entitlements	(2,740)	(3,495)
Separation and redundancies	-	(981)
Total employee benefits	(22,847)	(22,966)
Note 3B: Supplier		
Goods and services		
Contractors	(18,605)	(17,725)
Total goods and services	(18,605)	(17,725)
Goods and services are made up of:		
Provision of goods – external parties	(3,914)	(4,282)
Rendering of services – related entities	(2,338)	(1,880)
Rendering of services – external parties	(12,353)	(11,563)
Total goods and services	(18,605)	(17,725)
Other supplier expenses		
Operating lease rentals - external parties:		
Minimum lease payments	(4)	(2)
Workers compensation expenses	(58)	(57)
Total other supplier expenses	(62)	(59)
Total supplier expenses	(18,667)	(17,784)
Note 3C: Depreciation and Amortisation		
Depreciation:		
Building and leasehold improvements	(2,613)	(2,090)
Plant and equipment	(3,272)	(3,116)
Computer equipment	(483)	(519)
Vehicles	(551)	(583)
Office equipment	(24)	(48)
Ships, launches and vessels	(1,281)	(1,209)
Library books	(39)	(119)
Total depreciation	(8,263)	(7,684)
Amortisation:		
Intangibles	(274)	(226)
Total amortisation	(274)	(226)
Total depreciation and amortisation	(8,537)	(7,910)
Note 3D: Losses from Asset Sales		
Infrastructure, plant and equipment:		
Proceeds from sale	22	8
Carrying value of assets sold	(108)	(136)
Total losses from asset sales	(86)	(128)

Note 4: Income

	2013	2012
	\$'000	\$'000

OWN-SOURCE REVENUE**Note 4A: Sale of Goods and Rendering of Services**

Provision of goods - external parties	-	1
Rendering of services - related entities	8,754	6,767
Rendering of services - external parties	8,217	5,667
Total sale of goods and rendering of services	16,971	12,435

Note 4B: Interest

Deposits	2,623	4,308
Total interest	2,623	4,308

Note 4C: Other Revenue

Insurance claims	451	38
Other	10	186
Total other revenue	461	224

GAINS**Note 4D: Sale of Assets****Infrastructure, plant and equipment:**

Proceeds from sale	507	255
Carrying value of assets sold	(352)	(183)
Net gain from sale of assets	155	72

REVENUE FROM GOVERNMENT**Note 4E: Revenue from Government****Department of Innovation, Industry, Climate Change, Science, Research and Tertiary Education**

CAC Act body payment item	31,484	31,245
Total revenue from Government	31,484	31,245

Note 5: Financial Assets

	Notes	2013 \$'000	2012 \$'000
Note 5A: Cash and Cash Equivalents			
Cash on hand		6	5
Cash on deposit		5,296	330
Total cash and cash equivalents	10	5,302	335
Note 5B: Trade and Other Receivables			
Goods and Services:			
Goods and services - related entities		1,033	4,855
Goods and services - external parties		2,173	517
Total receivables for goods and services		3,206	5,372
Other receivables:			
Interest		389	828
GST Receivable from Australian Taxation Office		208	-
Other		9	215
Total other receivables		606	1,043
Total trade and other receivables (gross)		3,812	6,415
Receivables are expected to be recovered in:			
No more than 12 months		3,812	6,415
Total trade and other receivables (net)		3,812	6,415
Receivables are aged as follows:			
Not overdue		3,626	6,333
Overdue by:			
0 to 30 days		-	-
31 to 60 days		1	19
61 to 90 days		185	57
More than 90 days		-	6
Total receivables (gross)		3,812	6,415
Credit terms for goods and services were within 30 days (2012: 30 days).			
Note 5C: Other Investments			
Deposits		33,400	59,345
Total other investments	10	33,400	59,345
Total other investments are expected to be recovered in:			
No more than 12 months		33,400	59,345
Total other investments		33,400	59,345

Note 6: Non-Financial Assets

	2013 \$'000	2012 \$'000
Note 6A: Buildings and Leasehold Improvements		
Buildings on Crown Land:		
Fair value	61,721	55,866
Work in progress	20,548	12,378
	82,269	68,244
Less accumulated depreciation	-	(746)
Total buildings on crown land	82,269	67,498
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	33,079	31,827
Work in progress	17,273	8,421
	50,352	40,248
Less accumulated depreciation	-	(685)
Total plant and equipment	50,353	39,563
Computer equipment		
Fair value	1,310	994
Work in progress	56	357
	1,366	1,351
Less accumulated depreciation	-	(98)
Total computer equipment	1,366	1,253
Vehicles		
Fair value	1,427	1,386
Work in progress	35	-
	1,462	1,386
Less accumulated depreciation	-	(131)
Total vehicles	1,462	1,255
Office equipment		
Fair value	109	98
Less accumulated depreciation	-	(6)
Total office equipment	109	92
Ships, launches and vessels:		
Fair value	21,277	22,629
Work in progress	141	-
	21,417	22,629
Less accumulated depreciation	-	(314)
Total ships, launches and vessels	21,417	22,315
Library books		
Fair value	655	1,137
Less accumulated depreciation	-	(9)
Total library books	655	1,128
Total infrastructure, plant and equipment:		
Gross carrying value (at fair value)	57,858	58,072
Work in progress	17,504	8,778
	75,362	66,850
Less accumulated depreciation	-	(1,244)
Total infrastructure, plant and equipment	75,362	65,606

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

Note 6: Non-Financial Assets (cont'd)**Note 6C: Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment (2012-13)**

	Buildings and Leasehold Improvements	Infrastructure Plant and Equipment	Computer Equipment	Vehicles Equipment	Office Equipment	Ships, Launches & Vessels	Library Books	Total
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
As at 1 July 2012								
Gross book value	68,244	40,248	1,351	1,386	98	22,629	1,137	135,094
Accumulated depreciation/amortisation and impairment	(746)	(685)	(98)	(131)	(6)	(314)	(9)	(1,990)
Net book value 1 July 2012	67,498	39,563	1,253	1,255	92	22,315	1,128	133,104
Additions:								
By purchase	15,589	14,253	599	1,013	46	389	-	31,889
Revaluations recognised in other comprehensive income	1,795	-	-	-	-	-	(434)	1,361
Depreciation/amortisation expense	(2,613)	(3,272)	(483)	(551)	(24)	(1,281)	(39)	(8,263)
Disposals		(191)	(3)	(255)	(5)	(6)	-	(460)
Net book value 30 June 2013	82,269	50,353	1,366	1,462	109	21,417	655	157,631
Net book value as of 30 June 2013 represented by:								
Gross book value	82,269	50,353	1,366	1,462	109	21,417	655	157,631
Accumulated depreciation/amortisation							-	
Net book value as of 30 June 2013 represented by:	82,269	50,353	1,366	1,462	109	21,417	655	157,631

Note 6: Non-Financial Assets (cont'd)**Note 6C (Cont'd): Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment (2011-12)**

	Buildings and Improvements \$'000	Leasehold Improvements \$'000	Infrastructure Plant and Equipment \$'000	Computer Equipment \$'000	Vehicles \$'000	Office Equipment \$'000	Ships, Launches & Vessels \$'000	Library Books \$'000	Total \$'000
As at 1 July 2011									
Gross book value	57,126		24,081	2,434	2,209	235	18,600	2,800	107,485
Accumulated depreciation/amortisation and impairment	(111)		(6,486)	(1,480)	(993)	(121)	(2,678)	(376)	(12,245)
Net book value 1 July 2011	57,015		17,595	954	1,216	114	15,922	2,424	95,240
Additions:									
By purchase	13,432		19,054	844	542	-	202	-	34,074
By donation/gift	-		154	-	-	-	-	-	154
Revaluations recognised in other comprehensive income	(857)		5,978	(14)	283	26	7,400	(1,177)	11,639
Depreciation/amortisation expense	(2,090)		(3,116)	(519)	(583)	(48)	(1,209)	(119)	(7,684)
Disposals	(2)		(102)	(12)	(203)	-	-	-	(319)
Net book value 30 June 2012	67,498		39,563	1,253	1,255	92	22,315	1,128	133,104

Net book value as of 30 June 2012 represented by:

Gross book value	68,244	40,248	1,351	98	1,386	98	22,629	1,137	135,094
Accumulated depreciation/amortisation	(746)	(685)	(98)	(6)	(131)	(6)	(314)	(9)	(1,990)
Net book value as of 30 June 2012 represented by:	67,498	39,563	1,253	92	1,255	92	22,315	1,128	133,104

Revaluations of non-financial assets

All revaluations were conducted in accordance with the revaluation policy stated in Note 1. On 30 June 2013 independent valuers, Pickles Valuation Services and CBRE Valuations Pty Ltd conducted the revaluations. No indicators of impairment were found for buildings, infrastructure, plant and equipment and other non-financial assets.

The following revaluation increments / (decrements) were credited to the asset revaluation surplus by asset class and included in the equity section of the balance sheet. No increments / (decrements) were expensed (2012: nil)

	2013	2012
Buildings	\$'000	\$'000
Plant and equipment	1,795	(857)
Computer equipment	-	5,978
Vehicles	-	(14)
Office equipment	-	283
Ships, launches and vessels	-	26
Library books	-	7,400
Computer Software	(434)	(1,177)
	-	13
	1,361	11,652

Note 6: Non-Financial Assets (cont'd)

	2013	2012
	\$'000	\$'000
Note 6D: Intangibles		
Computer software:		
Internally developed – in use	2,484	1,505
Internally developed – in progress	31	489
Purchased	261	227
Sub-total	2,776	2,221
Less accumulated amortisation	(330)	(56)
Total computer software	2,446	2,165

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 (2012-13)

	Computer software internally developed \$'000	Computer Software purchased \$'000	Total \$'000
As at 1 July 2012			
Gross book value	1,994	227	2,221
Accumulated amortisation and impairment	(38)	(18)	(56)
Net book value 1 July 2012	1,956	209	2,165
Additions:			
Internally developed	520	-	520
Purchased	-	35	35
Amortisation	(204)	(70)	(274)
Net book value 30 June 2013	2,272	174	2,445
Net book value as of 30 June 2013 represented by:			
Gross book value	2,515	261	2,776
Accumulated amortisation and impairment	(243)	(87)	(330)
Net book value 30 June 2013	2,272	174	2,446

Note 6: Non-Financial Assets (cont'd)**Note 6E (Cont'd): Reconciliation of the Opening and Closing Balances of Intangibles (2011-12)**

	Computer software internally developed \$'000	Computer software purchased \$'000	Total \$'000
As at 1 July 2011			
Gross book value	1,585	326	1,911
Accumulated amortisation and impairment	(12)	(213)	(225)
Net book value 1 July 2011	1,573	113	1,686
Additions:			
Internally developed	537	-	537
Purchased	-	156	156
Revaluations and impairments recognised in other comprehensive income	(1)	14	13
Disposals	-	(1)	(1)
Amortisation	(153)	(73)	(226)
Net book value 30 June 2012	1,956	209	2,165
Net book value as of 30 June 2012 represented by:			
Gross book value	1,994	227	2,221
Accumulated amortisation and impairment	(38)	(18)	(56)
Net book value 30 June 2012	1,956	209	2,165

Note 6: Non-Financial Assets (cont'd)

	2013 \$'000	2012 \$'000
<u>Note 6F: Inventories</u>		
Inventories held for distribution:		
Inventories held for distribution	158	156
<i>Total inventories</i>	158	156

During 2013, \$409,420 of inventory held for distribution was recognised as an expense (2012: \$458,232).

All inventories are expected to be distributed in the next 12 months.

Note 6G: Other Non-Financial Assets

Prepayments	349	285
<i>Total other non-financial assets</i>	349	285
Total other non-financial assets - are expected to be recovered in:		
No more than 12 months	349	285
<i>Total other non-financial assets</i>	349	285

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

Note 7: Payables

	2013 \$'000	2012 \$'000
<u>Note 7A: Suppliers</u>		
Trade creditors and accruals	(2,739)	(5,106)
<i>Total suppliers payables</i>	(2,739)	(5,106)
Suppliers payables expected to be settled within 12 months:		
Related entities	(227)	(165)
External parties	(2,512)	(4,941)
<i>Total suppliers payables</i>	(2,739)	(5,106)

All suppliers are expected to be settled within 12 months.

Settlement was usually made within 30 days.

Note 7B: Other Payables

Unearned revenue	(3,825)	(3,726)
GST payable	-	(16)
Salaries and wages including oncosts	(743)	(660)
Other	(7)	(7)
<i>Total other payables</i>	(4,575)	(4,409)

Total other payables are expected to be settled in:

No more than 12 months	(4,575)	(4,409)
<i>Total other payables</i>	(4,575)	(4,409)

Note 8: Non-Interest Bearing Liabilities

	2013 \$'000	2012 \$'000
Note 8A: Non-Interest Bearing Loans		
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 on 7th November 2007 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 regarding loan from Government refer Note 11.

Note 9: Provisions

	2013 \$'000	2012 \$'000
Note 9A: Employee Provisions		
Annual leave	(3,142)	(2,911)
Long service leave	(4,518)	(4,301)
Superannuation on annual and long service leave	(996)	(843)
Workers compensation on annual and long service leave	(11)	(15)
Total employee provisions	(8,667)	(8,070)
Employee provisions are expected to be settled in:		
No more than 12 months	(2,223)	(1,602)
More than 12 months	(6,444)	(6,468)
Total employee provisions	(8,667)	(8,070)

Note 10: Cash Flow Reconciliation

	2013 \$'000	2012 \$'000
Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement		
Cash and cash equivalents as per:		
Cash flow statement	5,302	59,680
Balance sheet	5,302	59,680
Difference	<u>-</u>	<u>-</u>
 Balance Sheet comprises of:		
Cash and cash equivalents	5,302	335
Investments	-	59,345
Total	<u>5,302</u>	<u>59,680</u>
 In 2011-12 financial year investments included term deposits readily converted to cash. In 2012-13 the investments readily convertible to cash had been recognised as cash and cash equivalent in the balance sheet		
Reconciliation of net cost of services to net cash from operating activities:		
Net cost of services	(29,949)	(31,751)
Add revenue from Government	31,484	31,245
 Adjustments for non-cash items		
Depreciation / amortisation	8,537	7,910
Gain on disposal of assets	(155)	(72)
Loss on disposal of assets	86	128
Contribution of non-financial asset	-	(154)
 Changes in assets / liabilities		
(Increase) / decrease in net receivables	2,603	3,988
(Increase) / decrease in inventories	(1)	37
(Increase) / decrease in prepayments	(65)	24
Increase / (decrease) in employee provisions	598	805
Increase / (decrease) in supplier payables	(2,201)	4,511
Net cash from operating activities	<u>10,937</u>	<u>16,671</u>

Note 11: Contingent Assets and Liabilities

	Claims for Damages		Debt Forgiveness		Guarantees		Total	
	2013	2012	2013	2012	2013	2012	2013	2012
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Contingent assets								
Balance from previous period	-	-	500	500	441	579	941	1,079
New contingent assets recognised	137	-	-	-	-	82	137	82
Guarantees expired	-	-	-	-	(122)	(220)	(122)	(220)
Total contingent assets	137	-	500	500	319	441	956	941

Quantifiable Contingencies

AIMS holds performance guarantees of \$319,000 (2012: \$441,000)

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. The contingent asset of \$500,000 is a forgiveness amount providing certain criteria is met over the life of the loan to 7 November 2037.

A contingent asset of \$137,000 is also reported for claims for damages/costs. AIMS is pursuing the claim.

Unquantifiable Contingencies

At 30 June 2013, AIMS is not aware of any material unquantifiable contingencies.

Significant Remote Contingencies

AIMS had no significant remote contingencies.

Note 12: Directors Remuneration

	2013 No.	2012 No.
The number of non-executive directors of AIMS included in these figures are shown below in the relevant remuneration bands:		
\$0 to \$29,999	4	4
\$30,000 to \$59,999	2	2
Total	6	6
	\$	\$
Total remuneration received or due and receivable by directors of AIMS	<u>(181,829)</u>	<u>(174,844)</u>

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 (2012: Nil)

Other transactions with directors or director-related entities

There were no other transactions with Directors or Director related entities during the period (2012: Nil).

Note 14: Senior Executive Remuneration

Note 14A: Senior Executive Remuneration Expenses for the Reporting Period

	2013	2012
	\$	\$
Short-term employee benefits:		
Salary	(1,299,177)	(974,306)
Annual leave accrued	(72,390)	(34,511)
Performance bonuses	(122,245)	(158,488)
Other	(92,099)	(71,547)
<i>Total short-term employee benefits</i>	<u>(1,585,911)</u>	<u>(1,238,852)</u>
Post-employment benefits:		
Superannuation (post employment benefits)	(202,499)	(153,618)
<i>Total post-employment benefits</i>	<u>(202,499)</u>	<u>(153,618)</u>
Other long-term benefits:		
Long-service leave	(52,940)	(47,082)
<i>Total other long-term benefits</i>	<u>(52,940)</u>	<u>(47,082)</u>
<i>Total employment benefits</i>	<u>(1,841,350)</u>	<u>(1,439,552)</u>

During the year AIMS paid \$Nil in termination benefits to senior executives (2012: Nil).

Notes:

1. Note 14A is prepared on an accrual basis (therefore the performance bonus expenses disclosed above may differ from the cash 'Bonus paid' in Note 14B).
2. Note 14A excludes acting arrangements and part-year service where total remuneration expensed for a senior executive was less than \$180,000.
3. "Other" includes motor vehicle allowance.

Note 14: Senior Executive Remuneration (cont'd)**Note 14B: Average Annual Reportable Remuneration Paid to Substantive Senior Executives During the Reporting Period****Average annual reportable remuneration paid to substantive senior executives in 2013**

Average annual reportable remuneration ¹	Substantive senior executives	No.	Reportable salary ²	Contributed superannuation ³	Reportable allowances ⁴	Bonus paid ⁵	Total reportable remuneration
			\$	\$	\$	\$	\$
Total remuneration (including part-time arrangements):							
\$180,000 to \$209,999	1		151,865	30,736	-	-	182,601
\$240,000 to \$269,999	1		196,470	27,001	-	30,229	253,700
\$300,000 to \$329,999	1		218,053	28,846	-	58,831	305,730
\$360,000 to \$389,999	1		318,716	55,892	-	-	374,608
Total	4						

Average annual reportable remuneration paid to substantive senior executives in 2012

Average annual reportable remuneration ¹	Substantive senior executives	No.	Reportable salary ²	Contributed superannuation ³	Reportable allowances ⁴	Bonus paid ⁵	Total reportable remuneration
			\$	\$	\$	\$	\$
Total remuneration (including part-time arrangements):							
\$180,000 to \$209,999	1		177,329	30,224			207,553
\$240,000 to \$269,999	1		190,899	22,037	-	34,517	247,453
\$270,000 to \$299,999	1		201,833	43,500	-	33,203	278,536
\$480,000 to \$509,999	1		296,168	27,599	-	178,161	501,928
Total	4						

Notes:

1. This table reports substantive senior executives who received remuneration during the reporting period. Each row is an averaged figure based on headcount for individuals in the band.
2. 'Reportable salary' includes the following:
 - a) gross payments (less any bonuses paid, which are separated out and disclosed in the 'bonus paid' column);
 - b) reportable fringe benefits (at the net amount prior to 'grossing up' to account for tax benefits); and
 - c) salary sacrificed benefits.
3. The 'contributed superannuation' amount is the average actual superannuation contributions paid to senior executives in that reportable remuneration band during the reporting period.
4. 'Reportable allowances' are the average actual allowances paid as per the 'total allowances' line on individuals' payment summaries.
5. 'Bonus paid' represents average actual bonuses paid during the reporting period in that reportable remuneration band. The 'bonus paid' within a particular band may vary between financial years due to various factors such as individuals commencing with or leaving the entity during the financial year.
6. Various salary sacrifice arrangements were available to senior executives including superannuation, motor vehicle and expense payment fringe benefits. Salary sacrifice benefits including salary sacrificed superannuation are reported in the 'reportable salary' column.
7. Salary banding in 2012-13 commenced at \$180,000 (2011-12 \$150,000).

Note 14: Senior Executive Remuneration (cont'd)**Note 14C: Average Annual Reportable Remuneration Paid to Other Highly Paid Staff during the Reporting Period****Average annual reportable remuneration paid to other highly paid staff in 2013**

Average annual reportable remuneration ¹	Other highly paid staff				
	No.	Reportable salary ²	Contributed superannuation ³	Reportable allowances ⁴	Total reportable remuneration
		\$	\$	\$	\$
Total remuneration (including part-time arrangements):					
\$180,000 to \$209,999	3	170,207	24,506	-	194,713
\$270,000 to \$299,999	1	229,073	41,592	-	270,665
Total	4				

Average annual reportable remuneration paid to other highly paid staff in 2012

Average annual reportable remuneration ¹	Other highly paid staff				
	No.	Reportable salary ²	Contributed superannuation ³	Reportable allowances ⁴	Total reportable remuneration
		\$	\$	\$	\$
Total remuneration (including part-time arrangements):					
\$180,000 to \$209,999	3	163,404	23,616	-	187,020
Total	3				

Notes:

1. This table reports staff:
 - a) who were employed by the entity during the reporting period;
 - b) whose reportable remuneration was \$180,000 or more for the financial period; and
 - c) were not required to be disclosed in Tables A, B or director disclosures.
 Each row is an averaged figure based on headcount for individuals in the band.
2. 'Reportable salary' includes the following:
 - a) gross payments (less any bonuses paid, which are separated out and disclosed in the 'bonus paid' column);
 - b) reportable fringe benefits (at the net amount prior to 'grossing up' to account for tax benefits); and
 - c) salary sacrificed benefits.
3. The 'contributed superannuation' amount is the average cost to Aims for the provision of superannuation benefits to other highly paid staff in that reportable remuneration band during the reporting period.
4. 'Reportable allowances' are the average actual allowances paid as per the 'total allowances' line on individuals' payment summaries.
5. Various salary sacrifice arrangements were available to other highly paid staff including superannuation, motor vehicle and expense payment fringe benefits. Salary sacrifice benefits are reported in the 'reportable salary' column, including salary sacrificed superannuation.

Note 15: Remuneration of Auditors

	Notes	2013 \$'000	2012 \$'000
Financial statement audit services were provided to AIMS.			
Fair value of the services provided:			
Audit Services		(49)	(49)
Total		(49)	(49)

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

Note 16: Financial Instruments

		2013 \$'000	2012 \$'000
Note 16A: Categories of Financial Instruments			
Financial Assets			
Held-to-maturity:			
Investments		33,400	59,345
Total	10	33,400	59,345
Loans and receivables:			
Cash at bank	10	5,302	335
Receivables for goods and services		3,206	5,372
Other receivables		389	828
Total		8,897	6,535
Carrying amount of financial assets		42,297	65,880
Financial Liabilities			
At amortised cost:			
Trade creditors		(2,739)	(5,106)
Unearned revenue		(3,825)	(3,726)
Loans from Government		(1,500)	(1,500)
Carrying amount of financial liabilities		(8,064)	(10,332)

Note 16B: Net Income and Expense from Financial Assets

Held-to-maturity			
Interest revenue (see note 4B)		2,623	4,308
Net gain/(loss) from financial assets		2,623	4,308

Note 16C: Net Income and Expense from Financial Liabilities

Financial liabilities - at amortised cost			
Interest expense		-	1
Net gain/(loss) from financial liabilities		-	1

The total interest expense from financial liabilities not at fair value through profit or loss was \$Nil (2012: \$1,000).

Note 16: Financial Instruments (cont'd)

Note 16D: Fair Value of Financial Instruments

	Carrying amount 2013 \$'000	Fair value 2013 \$'000	Carrying amount 2012 \$'000	Fair value 2012 \$'000
Financial Assets				
Cash at bank	5,302	5,302	335	335
Receivables for goods and services (net)	3,206	3,206	5,372	5,372
Other receivables	389	389	828	828
Investments	33,400	33,400	59,345	59,345
Total	42,297	42,297	65,880	65,880
Financial Liabilities				
Trade creditors	(2,739)	(2,739)	(5,106)	(5,106)
Unearned revenue	(3,825)	(3,825)	(3,726)	(3,726)
Loans from Government	(1,500)	(1,500)	(1,500)	(1,500)
Total	(8,064)	(8,064)	(10,332)	(10,332)

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.

Note 16E: Credit Risk

AIMS is exposed to minimal credit risk as the majority of loans and receivables are cash. 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 (2013: \$3,205,870 and 2012: \$5,372,000).

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.

	2013 \$'000	2012 \$'000
Financial assets		
Receivables for Goods and services	3,206	5,372
Total	3,206	5,372

AIMS holds no collateral to mitigate against credit risk.

Note 16: Financial Instruments (cont'd)**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
	2013 \$'000	2012 \$'000	2013 \$'000	2012 \$'000
Investments	33,400	59,345	-	-
Cash at bank	5,302	335	-	-
Receivables for goods and services	3,020	5,290	186	82
Total	41,722	64,970	186	82

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, Westpac 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 2013

	0 to 30 days \$'000	31 to 60 days \$'000	61 to 90 days \$'000	90+ days \$'000	Total \$'000
Receivables for goods and services	-	1	185	-	186
Total	-	1	185	-	186

Ageing of financial assets that were past due but not impaired for 2012

	0 to 30 days \$'000	31 to 60 days \$'000	61 to 90 days \$'000	90+ days \$'000	Total \$'000
Receivables for goods and services	-	19	57	6	82
Total	-	19	57	6	82

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 2013

	On demand \$'000	within 1 year \$'000	1 to 2 years \$'000	2 to 5 years \$'000	> 5 years \$'000	Total \$'000
Trade creditors	-	(2,739)	-	-	-	(2,739)
Unearned Revenue	-	(3,825)	-	-	-	(3,825)
Loans from Government	-	-	-	-	(1,500)	(1,500)
Total	-	(6,564)	-	-	(1,500)	(8,064)

Maturities for non-derivative financial liabilities 2012

	On demand \$'000	within 1 year \$'000	1 to 2 years \$'000	2 to 5 years \$'000	> 5 years \$'000	Total \$'000
Trade creditors	-	(5,106)	-	-	-	(5,106)
Consultancies and grants	-	(3,726)	-	-	-	(3,726)
Loans from Government	-	-	-	-	(1,500)	(1,500)
Total	-	(8,832)	-	-	(1,500)	(10,332)

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 (cont'd)**Note 16G: Market Risk**

AIMS holds basic financial instruments that do not expose AIMS to certain market risks such as "currency risks" and other "price risks". AIMS is moderately exposed to an 'interest rate risk' but is not significantly exposed to 'other price risk' and 'currency risk'.

The only interest-bearing items on the balance sheet are the cash at bank and investments. Interest earned on cash at bank and investments may be effected by changes in market interest rates. The following table represents the effect to the profit and loss and equity. 1% is anticipated to be a reasonable estimate of the maximum movement in market interest rates in financial year 2012-13.

Sensitivity of the analysis that the entity is exposed to for 2013

	Change in risk variable	Effect on	
		Profit and loss	Equity
	%	\$'000	\$'000
Interest rate risk	1%	321	321
Interest rate risk	-1%	(321)	(321)

Sensitivity of the analysis that the entity is exposed to for 2012

	Change in risk variable	Effect on	
		Profit and loss	Equity
	%	\$'000	\$'000
Interest rate risk	1%	577	577
Interest rate risk	-1%	(577)	(577)

Note 17: Financial Assets Reconciliation

	2013 \$'000	2012 \$'000
Financial assets		
Total financial assets as per balance sheet	42,514	66,095
Less: non-financial instrument components:		
Other receivables	217	215
Total non-financial instrument components	217	215
Total financial assets as per financial instruments note	42,297	65,880

Note 18: Reporting of Outcomes**Note 18A: Net Cost of Outcome Delivery**

	OUTCOME 1	
	2013 \$'000	2012 \$'000
Expenses	(50,159)	(48,790)
Income from non-government sector		
Sales of goods and rendering of services	16,971	12,435
Interest	2,623	4,308
Gain from disposal of assets	155	72
Other revenue	461	224
Total	20,210	17,039
Net cost of outcome delivery	(29,949)	(31,751)

Supplementary Financial Information (Unaudited)

Note 1: Revenue Comparison

Note 2: Source of sale of goods and rendering of services by sector

Note 3: Cost of output by Research Teams

SUPPLEMENTARY FINANCIAL INFORMATION (UNAUDITED)

NOTE 1:

Revenue comparison

	2009 \$'000	2010 \$'000	2011 \$'000	2012 \$'000	2013 \$'000
Appropriation revenue					
Operating	22,069	22,392	22,862	23,224	23,463
Asset replacement	5,557	8,021	8,021	8,021	8,021
Total appropriation revenue	27,626	30,413	30,883	31,245	31,484
Non-appropriation revenue					
Sale of goods and rendering of services ¹	18,324	17,675	15,898	12,435	16,971
Interest	1,469	1,703	4,061	4,308	2,623
Revenues from joint ventures	148				
Other revenue	2,105	353	417	296	616
Total non-appropriation revenue	22,046	19,731	20,376	17,039	20,210
Total Revenue	49,672	50,144	51,259	48,284	51,694
Non-appropriation ratio ²	44%	39%	40%	35%	39%

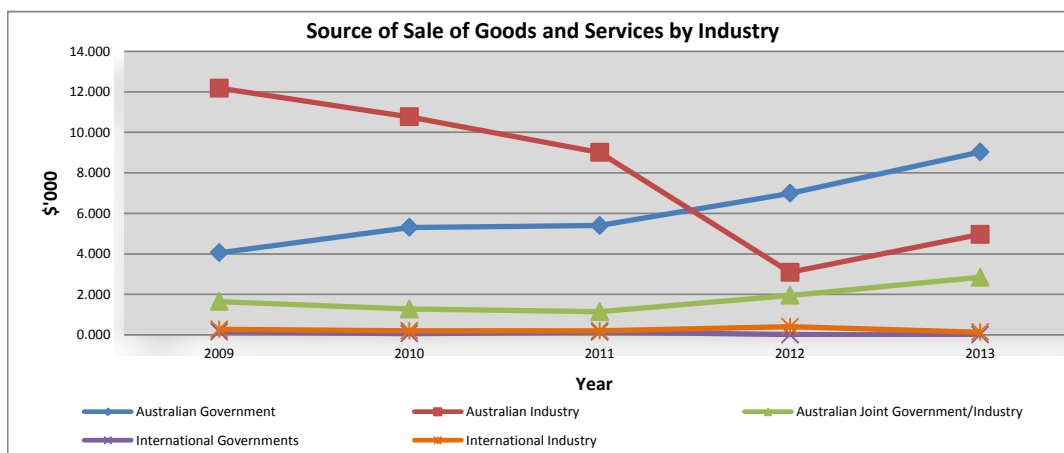
¹ Sale of goods and rendering of services includes consultancies, grants and contract collaborations.

² Non-appropriation ratio is percentage non-appropriation revenue of total revenue.

NOTE 2:

Source of sale of goods and rendering of services by sector

	2,009 \$'000	2,010 \$'000	2011 \$'000	2012 \$'000	2013 \$'000
Australian Government	4,055	5,302	5,400	6,986	9,027
Australian joint Government/industry	1,646	1,271	1,141	1,946	2,844
International governments	153	63	140	11	2
Australian industry	12,185	10,792	9,006	3,087	4,965
International industry	268	198	196	404	133
Sale of goods	17	49	15	1	-
	18,324	17,675	15,898	12,435	16,971



SUPPLEMENTARY FINANCIAL INFORMATION (UNAUDITED)**Cost of Output by Research Programs**

	Variable \$'000	Salaries \$'000	Depreciation \$'000	Overheads \$'000	Total \$'000
Data and Technology Solutions	3,535	2,856	439	4,597	11,427
A Healthy and Resilient GBR	3,410	5,583	703	8,987	18,683
Sustainable Coastal Ecosystem & Industries in Tropical Australia	1,888	3,390	342	5,456	11,076
Sustainable Use of NW Marine Ecosystems	3,416	2,108	57	3,393	8,974
Total	12,249	13,937	1,541	22,433	50,160
Percentage of total expenses	24%	28%	3%	45%	100%

PART FOUR: APPENDICES

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

2. NATIONAL RESEARCH PRIORITY GOALS

A. An environmentally sustainable Australia

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

1. Water—a critical resource
Sustainable ways of improving water productivity, using less water in agriculture and other industries, providing increased protection of rivers and groundwater and the re-use of urban and industrial waste waters.
2. Transforming existing industries
New technologies for resource-based industries to deliver substantial increases in national wealth while minimising environmental impacts on land and sea.
3. Overcoming soil loss, salinity and acidity
Identifying causes of and solutions to land degradation using a multidisciplinary approach to restore land surfaces.
4. Reducing and capturing emissions in transport and energy generation
Alternative transport technologies and clean combustion and efficient new power generation systems and capture and sequestration of carbon dioxide.
5. Sustainable use of Australia's biodiversity
Managing and protecting Australia's terrestrial and marine biodiversity both for its own value and to develop long-term use of ecosystem goods and services ranging from fisheries to ecotourism.
6. Developing deep earth resources
Smart high-technology exploration methodologies, including imaging and mapping the deep earth and ocean floors, and novel efficient ways of commodity extraction and processing (examples include minerals, oil and gas) while minimising negative ecological and social impacts.
7. Responding to climate change and variability
Increasing our understanding of the impact of climate change and variability at the regional level across Australia and addressing the consequences of these factors on the environment and on communities.

B. Promoting and Maintaining Good Health

Promoting good health and well being for all Australians.

1. A healthy start to life
Counteracting the impact of genetic, social and environmental factors which predispose infants and children to ill health and reduce their well being and life potential.
2. Ageing well, ageing productively
Developing better social, medical and population health strategies to improve the mental and physical capacities of ageing people.
3. Preventive healthcare
New ethical, evidence-based strategies to promote health and prevent disease through the adoption of healthier lifestyles and diet, and the development of health-promoting products.
4. Strengthening Australia's social and economic fabric
Understanding and strengthening key elements of Australia's social and economic fabric to help families and individuals live healthy, productive and fulfilling lives.

C. Frontier Technologies for Building and Transforming Australian Industries

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

1. Breakthrough science
Better understanding of the fundamental processes that will advance knowledge and facilitate the development of technological innovations.
2. Frontier technologies
Enhanced capacity in frontier technologies to power world-class industries of the future and build on Australia's strengths in research and innovation (examples include nanotechnology, biotechnology, ICT, photonics, genomics/phenomics, and complex systems).
3. Advanced materials
Advanced materials for applications in construction, communications, transport, agriculture and medicine (examples include ceramics, organics, biomaterials, smart material and fabrics, composites, polymers and light metals).
4. Smart information use
Improved data management for existing and new business applications and creative applications for digital technologies (examples include e-finance, interactive systems, multi-platform media, creative industries, digital media creative design, content generation and imaging).
5. Promoting an innovation culture and economy
Maximising Australia's creative and technological capability by understanding the factors conducive to innovation and its acceptance.

D. Safeguarding Australia

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

1. Critical infrastructure
Protecting Australia's critical infrastructure including our financial, energy, communications and transport systems.
2. Understanding our region and the world
Enhancing Australia's capacity to interpret and engage with its regional and global environment through a greater understanding of languages, societies, politics and cultures.
3. Protecting Australia from invasive diseases and pests
Counteract the impact of invasive species through the application of new technologies and by integrating approaches across agencies and jurisdictions.
4. Protecting Australia from terrorism and crime
By promoting a healthy and diverse research and development (R&D) system that anticipates threats and supports core competencies in modern and rapid identification techniques.
5. Transformational defence technologies
Transform military operations for the defence of Australia by providing superior technologies, better information and improved ways of operation.

3. PERFORMANCE INDICATORS

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

Key Performance Goals

	KEY PERFORMANCE GOALS	MEASURE/INDICATOR	Frequency
Science quality			
Scientific publications	Transfer new knowledge generated by AIMS and its collaborators through high quality scientific publications in high impact journals and relevant user-focused publications	<ul style="list-style-type: none"> Number of peer reviewed scientific publications reported quarterly against previous year Trend in publication level 	Annual
Citation analysis	Ongoing improvement in the quality and impact of AIMS' journal publications	<ul style="list-style-type: none"> Retrospective citation analysis using Science Citation Index 	5-yearly
Increase science capacity	Increase in number of postdoc positions. Target is annual average of 10 FTEs	<ul style="list-style-type: none"> Number of research scientists and postdocs 	Annual
External assessment and review	Ongoing improvement of AIMS research performance	<ul style="list-style-type: none"> Expert review of the quality and impact of AIMS Research Performance 	Within quadrennium
Enhancing impact/relationships			
Joint ventures	Enhance impact and research capacity through co-investment in research	<ul style="list-style-type: none"> Joint ventures and current status 	Annual
Leverage through collaboration	Maintain and focus AIMS' collaborative approach to research	<ul style="list-style-type: none"> Collaborations (collaborative research projects) and significant outputs Number of collaborations and percentage of research papers from collaborations 	Annual

	KEY PERFORMANCE GOALS	MEASURE/INDICATOR	Frequency
Enhance Australia's future capabilities in marine science	Contribution to teaching	<ul style="list-style-type: none"> Students, completions and significant outputs reported quarterly Number of jointly supervised post-graduate students (PhD and Masters, with trend) Number of internships and undergraduates (with trend) 	Annual
Effective use of resources			
Project management	Timely delivery of project milestones	<ul style="list-style-type: none"> Percentage of milestones completed on time 	Annual
Operational efficiency	Improve efficiency of (providing) key support	<ul style="list-style-type: none"> Number of continuous improvement projects completed 	Annual
Strategic alliances	Enhance research delivery by the development and maintenance of alliances with organisations that complement AIMS skills and infrastructure	<ul style="list-style-type: none"> Strategic alliances and current status 	Annual
Organisational growth			
Increase revenue	Increase revenue to support investment in AIMS research	<ul style="list-style-type: none"> Trend in total revenue reported annually 	Annual
Enhance core capabilities	Attract and retain key 'talent' through staff satisfaction	<ul style="list-style-type: none"> Report examples of actions taken and improvements achieved 	Annual
Develop staff	Seek improvements to integration of staff training into organisations goals	<ul style="list-style-type: none"> Report examples of actions taken and improvements achieved 	Annual
Technology diffusion			
Transfer to users	Enhance user uptake of AIMS research	<ul style="list-style-type: none"> Practices, instruments and processes developed by AIMS that have been adopted by users in industry, government and the community 	Annual
Funding mix / Source of revenue	Enhance engagement with industry	<ul style="list-style-type: none"> External earnings reported against previous year Trend in external earnings and source of funds 	Annual
Health, Safety and Environmental Performance			
Safety index	Improved safety culture	<ul style="list-style-type: none"> Report against indicators and provide examples of improvements 	Annual
Reduce environmental footprint	Ongoing improvements to AIMS operations to reduce our environmental footprint	<ul style="list-style-type: none"> Report examples of actions taken and improvements achieved 	Annual

4. SCIENCE PUBLICATIONS 2012

AIMS scientists published a total of 263 publications in the 2012 calendar year, comprising:

- 203 journal articles
- 17 books and book chapters
- 15 reports
- 9 conference papers
- 3 other articles
- 16 theses.

Journal articles

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5. AIMS SCIENTISTS' MEMBERSHIP OF EXTERNAL COMMITTEES AND NON-GOVERNMENT ORGANISATIONS

International Forums

Arafura Timor Seas Ecosystem Action (ATSEA) Scientific Steering Committee
 Arafura Timor Seas Expert Forum (ATSEF) – Steering Committee
 Association of Official Analytical Chemists (AOAC) Presidential Task Force on Marine and Freshwater Toxins
 Australia New Zealand South Pacific Division of IMarEST – Member, Divisional Executive
 Australian and New Zealand IODP Consortium's Science Committee.
 Census of Marine Life – Beyond 2010 Science Planning Committee
 FAO Steering Committee on Holothurian Fishing
 Global Environment Fund, Coral Disease Working Group
 Global Ocean Observing System (GOOS) – Co-Chair
 Great Barrier Reef Foundation - International Scientific Advisory Committee (ISAC)
 Indonesian Blue Carbon Scientific Advisory Committee, Agency for Fisheries & Marine Affairs
 Intergovernmental Panel on Climate Change (IPCC) Working Group on Coastal Wetlands
 Intergovernmental Panel on Climate Change (IPCC) Task Group, Greenhouse Gas Inventories
 International Oceanographic Commission Intergovernmental Panel on Harmful Algal Blooms – Australian rep
 IOC/CI/UDP International Blue Carbon Scientific Advisory Committee
 International Society for Microbial Ecology (ISME) International Board Member
 Ocean Acidification Expert Review Committee to the United Nation's Convention on Biological Diversity
 Ocean Tracking Network (Canada) Scientific Advisory Committee
 Save Our Seas Foundation: member of the Conservation and Science Advisory Panel
 Scientific Committee on Oceanic Research (SCOR) – Australian delegate
 United Nations Oceans & Law of the Sea Global Reporting and Assessment of the State of the Marine Environment (Regular Process). Member of the Pool of Experts
 Wildlife Trust of India – Scientific Advisory Committee
 World Porifera Database & World Register of Marine Species, Taxonomic Editor for Bioeroding Sponges

National Forums

AIMS@JCU - Management Committee
 AIMS@JCU - Scientific Advisory Committee
 Antarctic Science Advisory Committee (ASAC)
 Antarctic Research Assessment Committee (ARAC) Life Sciences - Chair
 ANZLIC Marine Community Profile Metadata Standards Governance Committee
 Arafura Timor Research Facility (ATRF) Governance Group
 Australian Animal Tagging and Monitoring System – Scientific Committee
 Australian Biological Resources Study (ABRS) National Advisory Committee; & Stakeholder Subcommittee
 Australian Centre for Tropical Freshwater Research (ACTFR) Advisory Committee
 Australian Government Department of Industry, Innovation, Science Research & Tertiary Education (DIISRTE) -
 Coordination Committee on Innovation (CCI)
 Australian Government Department of Sustainability, Environment, Water, Population and Communities (SEWPac) -
 Threatened Species Scientific Committee

Australian Government Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) – National Shark Recovery Group
 Australian Government Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) – BioIndustry Panel
 Australian Lions Foundation for Medical Research into Species of Medical Importance to Humans – Scientific Advisory Committee
 Australian Maritime Safety Authority (AMSA) Marine Pollution Recovery Technical Group
 Australian National Sportfishing Association (ANSA) Scientific Research Foundation
 Australian Ocean Data Centre Joint Facility
 Australian Research Council Centre of Excellence for Coral Reef Studies, Advisory Board
 Australian Tropical Marine Alliance (ATMA)
 Chevron Australia Pty Ltd (Wheatstone LNG) Dredging Technical Advise Panel
 Chevron Australia Pty Ltd – Independent expert on the Gorgon Marine Turtle Expert Panel (Ministerial appointment)
 Commonwealth Inter-departmental Committee on Access on ratification and implementation of the Nagoya Protocol
 Coral Reef Environmental Observatory Network (CREON) – Co-Chair
 Darwin Harbour Advisory Committee (DHAC)
 Darwin Harbour Integrated Monitoring and Research Program Committee
 Darwin Marine Supply Base – Taskforce Advisory Group
 eReefs Project Board
 eReefs User Reference Group
 Fisheries Research & Development Corporation (FRDC) National Research Providers Network Fishing and Aquaculture RD&E Strategy
 Fitzroy Partnership for River Health Science Panel
 Gladstone Healthy Harbour Partnership (GHHP) Science Panel
 Great Barrier Reef Coastal Experts Advisory Committee
 Great Barrier Reef Foundation Coral Genomics Consortium – representative on Coral Genomics Advisory Panel to the GBRF International Advisory Panel
 GBRMPA Reef Water Quality Protection Plan (RWQPP) Project Committee
 GBRMPA Ecosystem Reef Advisory Committee (ERAC)
 Healthy Waterways Alliance Mackay Whitsunday Ecosystem Water Quality Think Tank
 Integrated Marine Observing System (IMOS) Board
 Integrated Marine Observing System (IMOS) Steering Committee
 IMOS Australian National Moorings Network Facility
 IMOS Facility for Automated Intelligent Monitoring of Marine Systems (FAIMMS)
 IMOS Advisory Committee for the Australian Animal Tagging and Monitoring System
 INPEX Ichthys Project Expert Panel (IPDEP) for the Darwin Harbour LNG development
 James Cook University School of Business - Industry Advisory Panel
 Kakadu Research Advisory Committee
 Marine National Facility – Future Research Vessel Technical Advisory Group
 Marine National Facility Steering Committee (MNFSC)
 Marine Observation Australian & New Zealand Arrangement Steering Committee
 National Environmental Research (NERP) Marine Biodiversity Hub – Steering Committee
 NERP Marine Biodiversity Hub – Theme Leader
 National Environmental Research (NERP) Tropical Ecosystems Hub – Steering Committee
 National Environmental Research (NERP) Tropical Ecosystems Hub – Science Leader
 NERP Tropical Ecosystems Hub Torres Strait Implementation Group
 NERP Tropical Ecosystems Hub GBR Biodiversity Implementation Group

NERP Tropical Ecosystems Hub Water Quality Implementation Group
 Northern Australia Ministerial Forum Expert Advisory Panel
 North Australian Marine Research Alliance (NAMRA) – Director
 North Australian Marine Research Alliance (NAMRA) – Steering Committee
 National Strategic Rural Research and Development Investment Plan
 Oceans Policy Science Advisory Group (OPSAG) - Chair
 Q-IMOS - Node Leader
 Q-IMOS - Technical Reference Group
 Queensland Government Marine Stinger Advisory Committee - Research Working Group
 Reef and Rainforest Research Centre Pty Ltd – Board of Directors
 Reef Water Quality Protection Plan Independent Science Panel
 Rio Tinto - Dredging Environmental Advisory Group for Cape Lambert port expansion panel
 SafeFish – Technical Expert
 Torres Strait Scientific Advisory Committee
 Twin Cities Fish Stocking Society – Scientific Advisor
 WAIMOS Scientific Reference Group
 Western Australian Marine Science Institution (WAMSI) Board
 Western Australian Marine Science Institution (WAMSI) Governor
 Western Australian Marine Science Institution (WAMSI) Research & Development Committee
 Western Australian Marine Science Institution (WAMSI) Node Leader Science
 Western Australian Marine Science Institution (WAMSI) Dredging Science Advisory Committee (DSAC)
 Woodside Energy Pty Ltd – Environmental Advisory Panel for Browse LNG Development

GLOSSARY

ABARE	Australian Bureau of Agricultural and Resource Economics
ADAPTER	AUV Data Analysis for Predictability in Time-Evolving Regimes
AIMS	Australian Institute of Marine Science
AIMS Act	<i>Australian Institute of Marine Science Act 1972</i>
AMSA	Australian Maritime Safety Association
ANAO	Australian National Audit Office
ANU	Australian National University
AODN	Australian Ocean Data Network
APA	Annual Performance Agreement
APC	Australian Packaging Covenant
APPEA	Australian Petroleum Production and Exploration Association
ARC	Australian Research Council
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ATMRFP	Australian Tropical Marine Research Facilities Project
OSCAR	Online System for Comprehensive Activity Reporting
ATRF	Arafura Timor Research Facility
CAC Act	<i>Commonwealth Authorities and Companies Act 1997</i>
CDU	Charles Darwin University
CEO	Chief Executive Officer
CoECRS	Centre of Excellence for Coral Reef Studies
COTS	Crown-of-thorns starfish
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DIISRTE	Australian Government Department of Industry, Innovation, Science, Research and Tertiary Education
EAP	Employee Assistance Program
EDS	Electronic Data Systems
EEO	Equal Employment Opportunity
EPBC act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FAICD	Fellow of the Australian Institute of Company Directors
FAIM	Fellow of the Australian Institute of Management
FAIMMS	Facility for Automated Intelligent Monitoring of Marine Systems
FOI Act	<i>Freedom of Information Act 1982</i>
FTSE	Fellow of the Australian Academy of Technological Sciences and Engineering
GBR	Great Barrier Reef
GBRMPA	Great Barrier Reef Marine Park Authority
GBRWHA	Great Barrier Reef World Heritage Area
GOOS	Global Ocean Observing System
HSE	Health, Safety and Environment
IMOS	Integrated Marine Observing System
IOMRC	Indian Ocean Marine Research Centre
IPCC	Intergovernmental Panel on Climate Change
IPS	Information Publication Scheme

ISI	Institute for Scientific Information
IUCN	International Union for the Conservation of Nature
JCU	James Cook University
KRAs	Key Result Areas
LNG	Liquified natural gas
LTMP	Long Term Monitoring Program
MMP	Marine Monitoring Program
MPAs	Marine Protected Areas
NAMRA	North Australian Marine Research Alliance
NCRI	National Collaborative Research Infrastructure Strategy
NERP	National Environmental Research Program
NLRD	Notifiable Law Risk Dealing
NOAA	US National Oceanic and Atmospheric Administration
NRL	Naval Research Laboratory (U.S.)
NRPs	National Research Priorities
NTG	Northern Territory Government
OH&S	Occupational Health and Safety
OPSAG	Oceans Policy Science Advisory Group
R&D	Research and development
RRRC	Reef and Rainforest Research Centre Limited
RV	Research vessel
RWQPP	Reef Water Quality Protection Plan
SEWPaC	Australian Government Department of Sustainability, Environment, Water, Population and Communities
SRRP	Scott Reef Research Project
SSBA	Surface supply breathing apparatus
TSRA	Torres Strait Regional Authority
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNSW	The University of New South Wales
UQ	The University of Queensland
UWA	The University of Western Australia
WAMSI	Western Australian Marine Science Institution

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