STRATEGIC INTEGRATED MARINE SCIENCE

for the Marine State

RESEARCH OUTCOMES 2006-2011

western australian
marine science institution

better science better decisions

WHAT IS WAMSI?

WAMSI was established in 2006 with a grant of $21 million as a WA Government Major Research Facility to address key issues for the sustainable management of the Western Australian marine estate. WAMSI is an unincorporated joint venture partnership of State and Federal Government agencies, Western Australian universities and industry organisations formed to coordinate and deliver specific research and capacity building outcomes for Western Australia.

WAMSI's major strategic objective has been to "strengthen the coordination and capacity of marine research in Western Australia and to enhance the transfer of research outputs into outcomes of economic, environmental and social benefit to Western Australia."

WAMSI is a great success. In collaboration with its partners it has transformed the marine research community culture and focus in Western Australia over the past 5 years. WAMSI has achieved this strategic objective to a high degree through high quality science delivering the following target outcomes.

TARGETS AND OUTCOMES

Target	Outcomes
Improved coordination of marine science activities in WA	• Greater collaboration between >250 researchers across different disciplines and 15 institutions • Greater research "social capital" through new networks, trust and cooperation • New links between government agencies, research institutions and private sector companies • Strong stakeholder support • New marine research capacity (34 post-graduate students) • Enrichment of research base through skills of partner institutions • Coordinated and transparent data management
Improved understanding of marine and estuarine ecosystems of WA	• 10-fold increase in knowledge about Ningaloo Marine Park ecosystems, condition, trends and values • Knowledge of SW Bioregion ecosystems enhanced (e.g. kelp, nutrient cycling, water circulation, biological indicators) • Characterisation of Kimberley benthic habitats to support gas precinct decision • Discovery of new species to science (e.g. deepwater sponges) and confirmation of WA as a 'marine biodiversity hotspot' • Better understanding of Peel/Harvey Inlet ecosystem issues • Adoption of IMOS data streams for engineering and oceanographic research
Enhanced predictive capacity to model both natural and anthropogenic effects	• Downscaled climate models for WA context – better understanding of interaction between natural climate variability (decadal) and climate change (long- term) for WA • Map of coastal wave regimes, sea level changes and storm surge inundation – important for coastal planning and infrastructure management • Leeuwin current - predicted variation under climate change • Downscaled hydrodynamic and biogeochemical models of SW Region ecosystems – important for fisheries and ecosystem health • New survey methods for recreational fishing patterns and behaviour • Better decision support tools e.g. Management Strategy Evaluation Model/ELFSim applied to Ningaloo Marine Park • Tourism Destination Model developed for Ningaloo Coast • Modelling of internal waves in Browse Basin – significant savings for gas industry in undersea pipeline design and construction
Improved management decisions based on WAMSI research and other activities	• Ecosystem Based Fisheries Management – world leading initiative adopted for management of WA fisheries • Ningaloo Marine Park Management Plan assumptions and zoning tested and validated – knowledge being applied to current and future marine conservation planning • Development of new biotechnology legislation proposed for 2012 to enhance investment in biodiscovery/ biotechnology in WA • Dredging science research commenced to aid environmental impact assessment and conditions for dredging impacts • Science in support of Kimberley marine conservation and management commenced
Guaranteed investment	• Original State investment ($21 million) leveraged to $92.85 million cash and in-kind through funding from governments and industry • New funding provided for Dredging Science Program and Kimberley Marine Science Strategy – commenced in 2012

Other benefits have come from WAMSI initiatives and the quality of its researchers

- Enhanced international and national collaboration
- WAMSI influence on other significant investments in marine science in WA over the past 5 years:
  - relocation of CSIRO Wealth from Oceans Flagship HQ to WA
  - enhanced AIMS capacity in WA, including location of major marine research vessel "RV Solander" in Broome
  - successful bid for establishment of Indian Ocean Marine Research Centre at UWA
  - Commonwealth/ State funding for WA Integrated Marine Observing System

KEY FACTORS FOR SUCCESS

The strategic, integrated research coordinated through WAMSI would not have been achieved through individual institutions working independently, normal market forces or private sector research and development. It is only through organisations like WAMSI that the complex State and national strategic marine science priorities can be addressed effectively and efficiently.

Key factors for success have been:

- Excellent 'best-practise' governance model with independent Chairperson; and key stakeholders represented on the Board
- Development of culture of collaboration
- Dedicated CEO and Secretariat
- Strong science leadership through Node Leaders and Ningaloo Cluster Leader
- Effective systems for project management with high levels of accountability
- Focus on relevant science outcomes for government and industry
- Focus on building capacity and collaboration
- Inter-disciplinary and inter-institutional research projects
- Independent QA/QC of science and data management

FUTURE CHALLENGES

WA faces many challenges to sustainable management of its unique marine estate in the face of unprecedented development pressures and the effects of climate change. WAMSI research 2006-11 provides an excellent knowledge base and new tools; this base needs to be refined and improved and new issues addressed. Some of these are already underway. New science to understand the impacts of dredging on marine habitats and fauna and studies to improve understanding of the Kimberley marine environment for conservation and natural resource management have commenced under WAMSI 2.

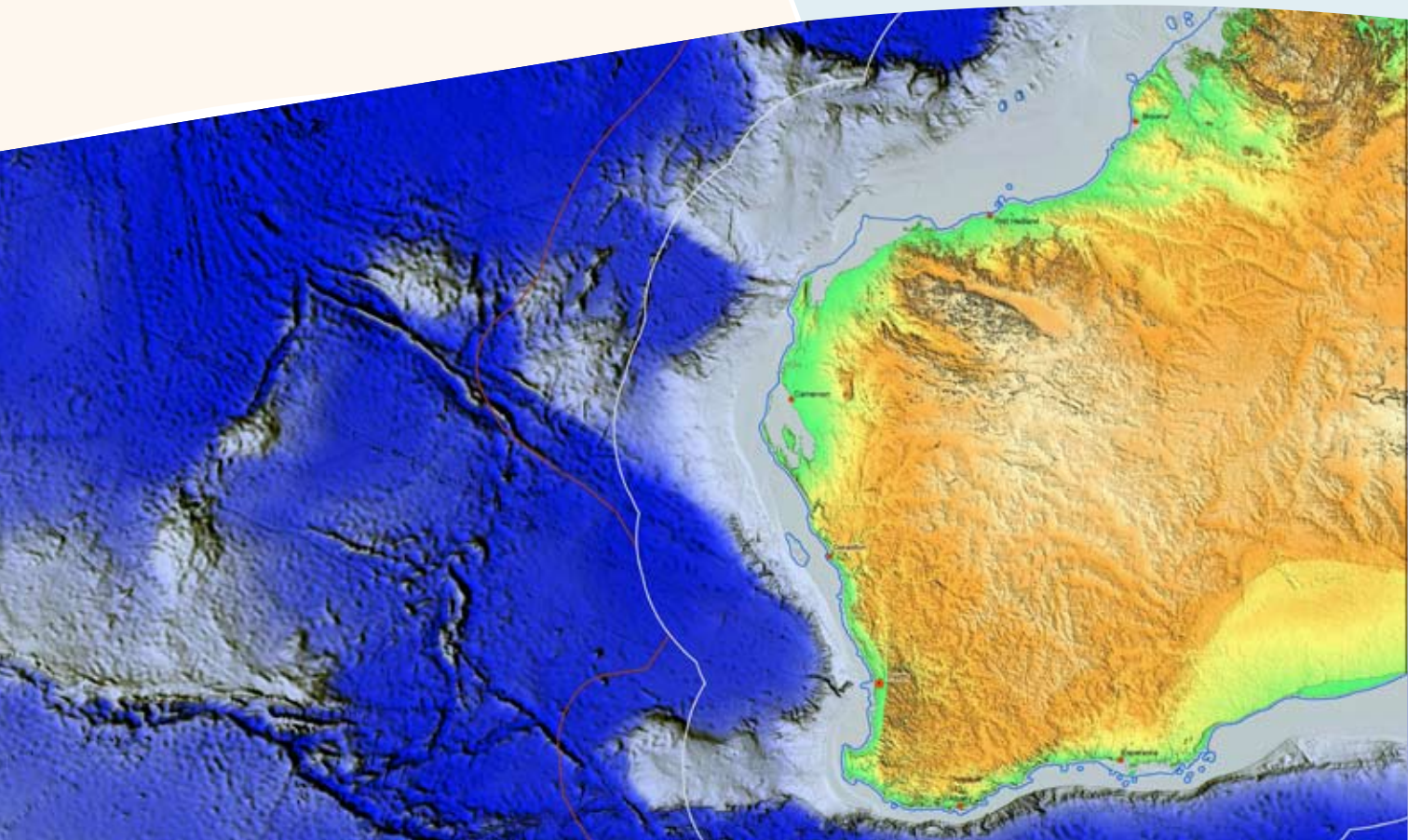
There are still significant gaps in the knowledge needed to address the State Government's high level policy objectives for marine science, marine conservation and marine natural resource management. For example:

- Further refinement of large regional climate models to WA to improve forecasting and predictions of natural climate variability and the effects of climate change
- The intensity of biological and physical research on Ningaloo Marine Park and the Southwest Bioregion needs to be repeated in other important marine environments e.g. Shark Bay, Pilbara coast and South coast of WA, in order to ensure sustainable use and wise management of the State's natural resources
- Understanding and managing human impacts on iconic marine wildlife such as whales, sharks, dugongs, turtles, sea lions and in-shore dolphins is a high focus public issue
- Better predictive understanding of the cumulative impacts of development and usage of the coastal and marine environment on the marine estate of Western Australia

BETTER SCIENCE
BETTER DECISIONS

Western Australia has Australia's longest coastline and an internationally significant coastal and fishing zone that contains temperate and tropical ecosystems on the continental shelf and in deep water. The Western Australian Government has set policy objectives for marine science, marine conservation and natural resource management, including improved strategic marine science capability and understanding the consequences and impacts of climate change.

"WAMSI will continue to play a key role through timely and relevant research information to address these objectives in coming years, as sought by its clients."



STAKEHOLDER SUPPORT

Key stakeholders have endorsed the success of WAMSI

Governance processes and integrating role in marine research.

" I see the key importance of Government, the commercial world and academe working together. You need all three for the most positive approach and the best outcome. I would consider WAMSI to be an excellent example of such collaboration. The outcome-driven approach, incorporating such leading organisations as Australian Institute of Marine Science and CSIRO, has generated valuable outcomes for our State and beyond economically and socially. In addition, WAMSI has played an important role in training the next generation of marine biologists and oceanographers, crucial skill sets as we seek to understand better our oceans and the Indian Ocean in particular."
Professor Lyn Beazley AO FTSE, WA Chief Scientist.

"The willingness of all parties to bring their research capacity to the table and have it integrated with other research capacity is an essential requirement (for success).... WAMSI has provided an integrating influence that has encouraged national research providers such as AIMS and CSIRO to take a significant role in Western Australian marine research issues. WAMSI stands out as a governance model for integrating marine research"
Dr Bernard Bowen AM FTSE, WAMSI Foundation Chairman.

Building capacity in marine science in WA

"An important component of WAMSI is to build marine science capacity and capability in the State, whether physical or ecological expertise. We see that WAMSI plays a really important role in building that capacity and capability of scientists and environmental professionals to meet the challenges of marine management and impact assessment in WA."
Dr Luke Smith, Principal Environment Scientist, Woodside.

The building of a collaborative culture between research providers and with research end-users

"WAMSI projects have been highly collaborative at both institutional management level down to the level of individual scientists. AIMS projects have all been strongly collaborative, sharing data, methods and techniques as well as ship time. WA universities, CSIRO and government agencies have all been involved. The AIMS research vessel RV Solander often hosts up to 12 scientists from 2-3 institutions at any one time."
Dr Andrew Heyward, Principal Research Scientist, AIMS.

Catalyst for change

"From a national perspective, the opportunities to grow marine science are greatest in WA. Partnership in WAMSI gave greater certainty to CSIRO co-investment opportunities, and the associated need for senior leadership based locally in Perth. As a consequence, CSIRO relocated the headquarters of the Wealth from Oceans Flagship (Australia's largest marine science organisational capability) from Sydney to Perth in 2009."
Dr Tom Hatton PSM, Director CSIRO Wealth from Oceans Flagship.

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