blueprint
for marine science
WESTERN AUSTRALIA

The Blueprint for Marine Science Initiative

Implementation Strategy 2016-2018

Building a unique collaboration between industry, government, research and community to improve marine science and ensure a competitive and responsible future Blue Economy off Western Australia.

This Implementation Strategy is the third stage of an end-user led process to ensure a strategic approach to marine science that supports industry, community and government activities off the coast of Western Australia.

Building on the ***Blueprint for Marine Science 2050*** report delivered in 2015, and the subsequent Premier's Roundtable for Marine Science discussions, this Implementation Strategy guides the foundation of a long-term collaboration between all sectors operating in our marine environment.

Our ocean is important

It is a place in which we play, fish, and take pride in its natural beauty. It is a place rich with extraordinary biodiversity, unique ecosystems, and Indigenous history, all of which we expect to be protected.

It is a place we look to for resources that lead to so many Western Australians having jobs, food, energy, and first-world services assisted by energy royalties and mineral shipping.

Science underpins our activities in our shared marine endowment. If we are to continue to grow into this frontier while conserving it for all, those charged with its custodianship, and those that will benefit from its development, must properly understand the environment they work within.

Marine and maritime industries will contribute $44 billion to the national economy - the majority driven by oil and gas developments off the western coast

With a coastline of almost 20,000km, almost a third of the nation's maritime exclusive economic zone is off Western Australia's coast

The Kimberley coast is one of the 4% of the world's oceans rated as having 'very low impact' from human activity, with the majority of other areas in the Arctic and Antarctic

The Western Rock Lobster is one of Australia's most valuable individual export fisheries

Aquaculture is one of the State Government's priorities for regional diversity and growth

We have one of Australia's fastest growing coastal development corridors in the southwest

The nation's largest shipping tonnage comes from the expanding Pilbara port network with offshore shipping increasing rapidly

Two of Australia's four marine-based World Heritage areas and two of five bioregions are off our coast

WA is the main interface with the Indian Ocean with associated strategic, economic and security implications and opportunities

Foreword from the Roundtable participants

There is a compelling business and moral case to make sure we understand the ocean we increasingly look to for economic growth. However, the *Blueprint for Marine Science 2050* report correctly describes the growing gap between that understanding and our desire to develop, use and protect our ocean.

We have developed this Implementation Strategy to prepare for this challenge through creating a new paradigm of cross-sector collaboration and marine science off Western Australia.

Colin Beckett
Independent co-Chair

Prof Peter Klinken
Western Australian Chief Scientist
and co-Chair

David Carter
Chief Executive Officer
Austral Fisheries

Gerry Flaherty
General Manager Assets
Chevron Australia

Bruce Lake
Chair APPEA

Mike Utsler
Chief Operations Officer
Woodside Energy

Ken Fitzpatrick
Chair Australian Energy
and Resources Growth Centre

Stuart Smith
Chief Executive Officer
NOPSEMA

Murray Criddle
Chair Midwest Regional
Development Commission

Irrespective of whether we represent investors or the public, uncertainty leads to cost as we try to design, manage or regulate risk away. Uncertainty may also undermine support and investment in what is otherwise responsible development.

We do well at investigating local projects, but we must do better in timely understanding of the issues and opportunities on the horizon, and the strategic understanding of the ocean that connects and moves between all of our projects and activities.

Right now we individually study the ocean in our own patches for our own internal purposes. This is an expensive way of doing business, does not allow stakeholders to trust our science, and will not develop the strategic understanding that will ultimately improve both context and certainty for our future activities.

Over the next decades tens of millions of dollars of science investment will be required to responsibly underpin the lower operating costs, effectiveness and longevity of current commercial and environmental management activities, and enable future sustainable projects. We would like to make that investment count and, through collaboration, generate the most value for all.

John Harrison
Chief Executive Officer
WA Fishing Industry Council

Dr Andrew Rowlands
Chief Executive Officer
RecFishWest

Roger Johnston
Chief Executive Officer
Pilbara Ports Authority

Richard Sellers
Director General Department
of Mines and Petroleum

Dr Tom Hatton
Chair
Environmental Protection Authority

Fiona Roche
Executive Director
Department of Premier and Cabinet

Peter Rundle
Chair South Coast Regional
Development Commission

Prof Shaun Collin
Premier's Fellow Marine Science
University of Western Australia

Patrick Seares
Chief Executive Officer
WAMSI

It will be a substantial challenge to build a broad and genuine collaboration in a previously competitive and disconnected area and in a time of serious financial constraint. But in responding to the current challenges, we must not lose sight of our long-term commercial interests, statutory responsibilities, or social compact with the people of Australia. We must act now to establish the relationships, frameworks and infrastructure for that future.

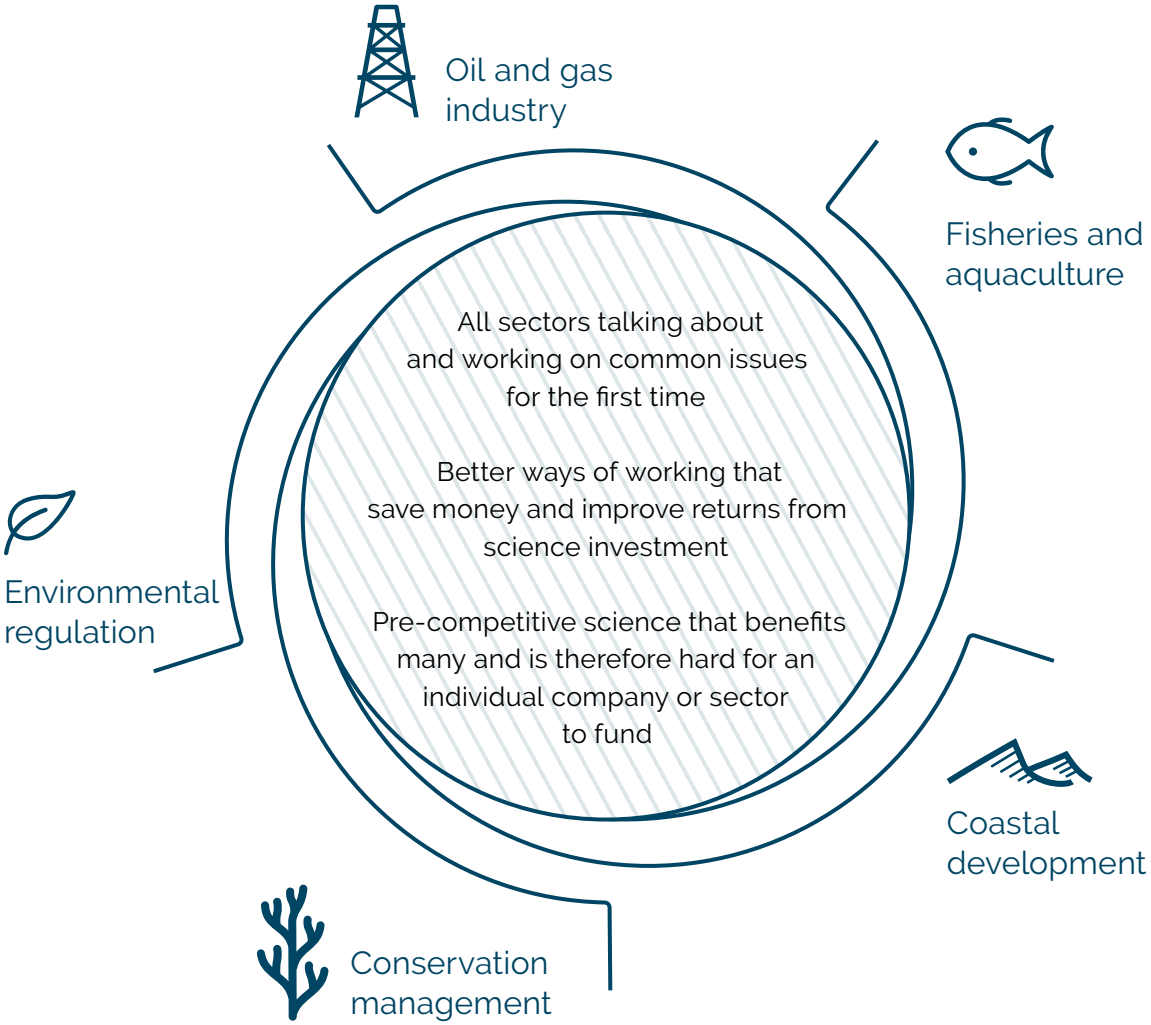
We recognise there is a willing and able marine science sector that has already taken great strides towards working collaboratively to produce the best solutions to issues we have. It is now up to us to work with that capability in genuine partnership for the benefit of all.

We thank the Western Australian Marine Science Institution (WAMSI) for initiating the Blueprint process and the Premier of Western Australia for the invitation to work together in designing a better future. We now commit to working together and invite others to help create the environment for collaboration between the industry, government, community and science sectors with an interest in our ocean.

It is wise to work together now to build a strong collaborative base for better times. This is our chance to responsibly grow Western Australia's and our nation's sustainable Blue Economy through science collaboration.

About the Blueprint Initiative

The Blueprint Initiative is establishing one of the world's most diverse marine science collaborations led by science end-users from the energy, fisheries, community, regulatory and government sectors active in Australia's western marine territories. The Initiative will instill collaboration as the new norm for marine science in both State and Commonwealth waters off Western Australia.



The collaboration will, for the first time, provide a framework for multiple sectors to work together on shared issues, and to improve science based policy and practice.

The collaboration will be responsible for planning, investing in and overseeing pre-competitive strategic marine science, and the coordination of sustained efforts to share data, observe the ocean, link science projects and engage the Western Australian community in the new knowledge developed about their ocean.

The Blueprint Initiative will begin with the participants of the 2015 Western Australian Premier's Roundtable for Marine Science who will support its initial objectives to broaden participation, construct the governance and investment frameworks and deliver quick wins that will support a sustained collaboration to support a responsible and sustainable Blue Economy.

The vision for the Blueprint Initiative

The Blueprint Initiative is laying down the framework for a long-term effort to ensure industry and community confidence in the sustainable development of Western Australia's marine environment.

Vision

- Commercial and recreational marine activities continue to grow whilst sustaining the ecological values of the marine environment off WA

Outcome

- Improve industry and community confidence in the sustainable development of WA's marine environment as a direct result of science-based innovation.

Goals

- Improved efficiency in compliance and infrastructure, and reduced operating costs and risk, through timely and targeted information.
- Improved efficiency, outcomes and timeliness of credible, independent, cross-sectoral marine science.
- Western Australia becoming a globally renowned hub for applicable industry and conservation focussed marine science and innovation.

A collaboration of this breadth and diversity presents many challenges, particularly in this stage of the economic cycle. However, the initial participants agree that the long-term operational benefits, and the need to be seen as credible and responsible by the community, are important enough to drive a step change in how organisations work together.

The case for change

The fundamental case for change is the growing gap in the understanding of our oceans identified in the *Blueprint for Marine Science 2050* report, the impact that gap will have on future productivity and environmental management, the cost savings of addressing these gaps collaboratively, and the expectation of the community for all parties to act responsibly.


NO SMOKING
BOCIMAR
MINERAL DALIAN

The approach to the Blueprint Initiative

The Blueprint Initiative is the third step in a process begun by the Western Australian Marine Science Institution with the *Blueprint for Marine Science 2050* report in 2015.

The subsequent Western Australian Premier's Roundtable for Marine Science confirmed the mandate for implementing the Blueprint Initiative.

The initiative will focus on expanding the partnership beyond the substantial end-user representation at the Roundtable, building the enabling infrastructure for a more collaborative marine science sector.

Process	Purpose	Resources
2015 Blueprint for Marine Science 2050 report	• End-users identify their future needs for marine science	• Commissioned by WAMSI
2016 WA Premier's Roundtable for Marine Science	• Sectoral leaders identify mandate for and direction of change	• Volunteered by participants
2016-18 Implementation Strategy	• Broaden participation and links, begin collaboration and establish enabling infrastructure and plans	• Start-up and planning investment from participants • Volunteered staff time from participant organisations • Re-scoping of individual projects to be collaborative
2018+ Blueprint Initiative	• Deliver ongoing value from an increasingly advanced and collaborative marine sector.	• Core sustained funding mechanism • Formal links to science programs at national (Growth Centre, NESP, IMOS) and state (WAMSI) levels.

Ensuring targeted science and investment

The Blueprint Initiative has been started in part to increase the targeting and quantum of investment in strategic science in priority areas. Without sustained investment the gaps identified in the *Blueprint for Marine Science 2050* will not be addressed.

The initiative must, however, ensure efficient and targeted science by embedding end-users in leadership and activities throughout science programs and through a credible science planning process before investment.

The four key steps to be followed before deciding the investment in Blueprint science are:

1. Determination of key questions stakeholders have regarding an issue
2. Synthesis of current baseline knowledge including collation of existing data
3. Determination of researchable questions and a science plan to address residual gaps
4. Investment decision and leveraging

The Blueprint model for science is familiar to business and research.

For a major research grant application: an opportunity is identified; baseline information is gathered to refine the questions; careful planning and business case development occurs; a proposal is made to the funder; and an investment decision is made.

For business investment decisions: the opportunity is identified; the pre-feasibility is using available information; the design and costing is completed; a proposal is made internally; and the investment decision is made.

The 2016-18 initiation stage of the Blueprint Initiative is being delivered by staff time, with funding and leadership provided by the Roundtable participants, and leveraged resources to deliver the establishment and planning activities outlined elsewhere in the strategy. This will allow the four key steps listed to be completed and investable proposals finalised for strategic programs in ~2018.

The 2016-18 Implementation Strategy

The Blueprint Initiative starts with a 2016-18 Implementation Strategy that will enable long-term collaboration.

More than 30 activities will create partnerships, tools and plans that will enable the ongoing Blueprint Initiative to deliver:

1. A sustained multi-sector collaboration
2. A targeted and valuable science program
3. Improved efficiency in marine science
4. Community confidence and support
5. A global marine science hub

Sustained multi-sector collaboration

A collaboration dealing with otherwise competing companies and industries, and bridging government and commercial interests needs highly effective governance, and people, to ensure that the benefits are received, the investment is fair, and the nature of work remains pre-competitive. Strong governance will establish the trust to collaborate not only on science, but to improve policy and standards based on new evidence.

Outcomes	Objectives	Key actions
Marine science issues and opportunities are addressed across sector	Innovative governance and broad participation	Review the end-user led *Blueprint for Marine Science 2050* report on a 5-yearly basis
		Engage Commonwealth and State Ministers in the Blueprint Initiative
		Invite broader participation within currently represented sectors, including the science, Commonwealth, Indigenous, defence, transport and NGO sectors
		Seek support from the WAMSI Board for WAMSI to lead the Blueprint Implementation Strategy
		Building on existing WAMSI processes, agree a standard legal framework for controlled data sharing, funding, working with Traditional Owners
		Implement a new legal multi-sector governance framework by early 2017, which includes the capacity to utilise both public and private science capability
		Formalise partnerships to national and international programs to ensure best value for money delivery of outcomes and reduce siloing within the marine sciences sector activities off Western Australia

A targeted and valuable science program

The key driver for the Blueprint Initiative is the gap in our understanding of the ocean we wish to develop, operate in more cheaply, and protect. This will only be addressed by sustained effort in strategic science solutions and innovative tool development against industry, government and the community priorities. This sustained effort must be supported by a sustained and substantial investment avoiding the stop-start nature of science funding which undermines innovation and the development of necessary capability.

Outcomes	Objectives	Key actions
Better informed management decisions based on targeted and credible evidence	Targeted, independent and leveraged strategic science programs enabled through sustained investment	Begin end-user and expert-led processes to scope science in priority issue areas
		Determine a systematic framework for oceanographic[1] and environmental[2] baseline programs
		Commission synthesis of baseline knowledge and data in priority areas
		Develop detailed, investable science plans for priority issues after synthesis is complete
		Agree on a sustained multi-sector investment mechanisms to support activities including a shared oil and gas sector investment model[3]
		Investment decision and resource/funding allocations

[1] In partnership with the Forum for Operational Oceanography
[2] In partnership with the National Environmental Science Program
[3] In partnership with the Australian Energy Resources Growth Centre

Improved efficiency in marine science

One of the most direct benefits of this collaboration will be the improved value that the public, companies and other funders of science will receive from greater efficiencies in how marine science is approached. In addition to maximising the use and value of existing investment, greater sharing and transparency will assist with public perception in emergencies or when management fails to protect certain values.

Outcomes	Objectives	Key actions
Cost savings and enhanced science impact from investment	Sharing infrastructure, data and people resources to maximise efficiency	Launch[1] the IGEM system for sharing oil and gas industry environmental metadata
		Early commitment of participants to share data through WAMSI that is high priority, low risk and currently inaccessible
		Adopt shared minimum metadata and data management standards
		Establish a webpage where infrastructure and science projects are logged in advance to reduce duplication and allow proactive links
		Develop a shared and trusted information facility[2] providing storage, web portal access and both community and manager/scientist/industry level information on marine science
		Establish a modelling and services framework to identify priority capability to support public and private activities and improve targeting of public investment
		Map long-term private and public observing with a view to sharing non-proprietary data streams and removing duplication
		Develop[3] a risk/opportunity based backbone observing scheme that will best support priority data needs and improve targeting of current and additional observation effort

[1] In partnership with APPEA
[2] In partnership with the Australian Ocean Data Network, LandGate, Pawsey and BoM
[3] In partnership with the Integrated Marine Observing System

Community confidence and support

Social licence to operate for both industry and government agencies is strengthened with awareness and clear support by the broader community for evidence–based decision-making. The recognition by the community of the substantial investment in science by all parties will be enhanced by a long-term, sustained and strategic approach rather than by the stop-start project based communication.

Outcomes	Objectives	Key actions
The community supports the way the marine environment is managed	Awareness, credibility and trust in marine science and its application is enhanced	Ensure best-practice independence, transparency and peer review is built into the governance for all science activities
		Engage[1] experts from media, education, outreach and science communication sectors to develop a collaborative community engagement strategy
		Early community focussed description on key issues and responses after synthesis stage
		Design[2] a program of education tools, information and activities leveraging the attractiveness of the marine environment to encourage STEM participation at primary and secondary level

[1] In partnership with the Western Australian Museum
[2] In partnership with the Department of Education

A global marine science hub

Western Australia already has a capable and innovative marine science sector. However, the sustained relationship developed through this unique collaboration, and improved links between science organisations, will support Western Australia becoming a centre for marine science education and innovation across the Indian Ocean Rim. This will not only lead to increasingly innovative solutions for local industry and the community, but also a knowledge economy including an attractive place for international students and the opportunity to partner with Indian Ocean Rim nations in assisting their own aspirations for a sustainable Blue Economy.

Outcomes	Objectives	Key actions
An expanded knowledge economy for Western Australia attracting 'best minds' globally to contribute locally and regionally	Perth is a globally renowned hub for marine science capability and learning	Collaboratively link with Dept of Innovation, Industry and Science, Dept of Foreign Affairs and Trade and the World Ocean Council (WOC) to strategically leverage Western Australian science leadership and partnerships across the Indian Ocean
		Complete an analysis of local research sector capability against priority knowledge gaps in the *Blueprint*
		Identify opportunities for 'joint centres' with government, industry and academic staff actively participating in training on industry priority capability to enhance outcome focused science
		Engage the WOC in the Blueprint Initiative and investigate the formation of a WOC regional program in Australia's northwest
		Investigate opportunity[1] for joint degrees in marine science utilising best teaching across four WA universities to deliver a compelling global education option
		Plan, collectively lobby, and contribute resources, towards creating appropriate national programs to be based in Perth with a focus on operational oceanography, spatial biodiversity and long-term offshore energy sector issues
		Produce a prospectus for Indian Ocean Rim issue focussed applied marine science higher education in Western Australia

[1] In partnership with the Western Australian Universities

Initial science priorities

The initial science priorities for the collaboration are consistent with the end-user led *Blueprint for Marine Science 2050* and consistent with the science community led *National Marine Science Plan*.

The Blueprint Initiative will implement a carefully planned and staged approach to science to ensure science investment is targeted against actual knowledge gaps.

Type	Priorities	Outcome
Data priorities	Standardisation of metadata and data unitisation and management for priority data sets and adoption by industry, government and research sector	Future data synthesis and interoperability is cheaper
	Baseline datasets to be collated: • Currents, temperature and waves • Benthic habitat • Protected and iconic species movements • Demersal fish • Bathymetry Rollout priority: 1) Pilbara-NW Shelf nearshore and offshore 2) Kimberley offshore 3) South coast nearshore 4) MSC fisheries and prospective aquaculture areas 5) Southwest nearshore (multiple use)	Baselines to allow enhanced monitoring, identification of change, validation of models and improved access for private sector project level design/assessment projects
Science priorities	Activity – regionally suitable decommissioning pathways	Pragmatic decommissioning policy
	Risk – impacts of marine noise	Resolution of actual vs perceived impacts
	Activity – seafood prospectivity and productivity	Improved targeting, management and resource access for sustainable fisheries and aquaculture
	Risk – fate of hydrocarbons in oil spills	Improve predictability, risk assessment and decision support for response
	Risk – acceptable marine wildlife interaction with fishing and energy sectors	Improved regulation and conservation investment
	Risk – biosecurity risk and mitigation strategies	Identify actual risk and create cheaper ways of managing
Baseline priorities	Oceanography for NW offshore operations and maintenance and oil spill forecasting, coastal development and fisheries situation	Physical building blocks for all marine prediction and risk activities
	Biodiversity and habitat baselines and indicators	Underpinning efficient and effective regulation of key current and future pressures
	Indigenous knowledge in pressured areas	Holistic management and improved research
	Dedicated marine data analytics and synthesis for management	Using new data bases to improve prediction capacity

Managing the 2016-2018 Implementation Strategy

This Strategy will design and deliver the fit-for-purpose governance to underpin a long-term collaboration.

Until that time, the delivery of this 2016-18 Implementation Strategy will be overseen by a Steering Committee co-Chaired by Western Australia's Chief Scientist Professor Peter Klinken and Western Australian Marine Science Institution (WAMSI) Chair Ms Naomi Brown.

An Advisory Forum including community, Indigenous, research, government, industry, WAMSI and Roundtable participants will select the Steering Committee and meet regularly to guide the Blueprint Initiative and broaden participation.

WAMSI will coordinate the work program under direction from the Steering Committee with an Implementation Group consisting of senior operational staff from the participant organisations.

While WAMSI will coordinate the overall program, individual activities will be led by best placed industry, government or research groups, often through multi-sector teams. WAMSI's role will often be to ensure the right people, from across sectors, are around the table to plan and deliver these activities collaboratively.

Once the design of the ongoing Blueprint collaboration governance is completed in 2017, transitional arrangements will be put in place to hand over activities to this ongoing and unique collaboration.

Resources for the initial enabling activities in this strategy will be provided primarily by the Roundtable participants with support from WAMSI partners. One of the actions in this strategy is the development of a sustained and shared funding mechanism for the long-term science and data activities.

UniPrint 133374

Getting in touch

The Blueprint Initiative is primarily a vehicle to drive collaboration. Organisations interested in the process are encouraged to contact WAMSI to talk further about participating in this Initiative.

Phone: +61 (08) 6488 4571
Email: info@marinescienceblueprint.org.au
Web: www.marinescienceblueprint.org.au

blueprint
for marine science
WESTERN AUSTRALIA