



CAPABILITY STATEMENT

PORT ENVIRONMENTAL SERVICES

MSCIENCE – MARINE RESEARCH

Capability statement – port environmental services

This statement provides a concise overview of MScience’s capability and experience in providing marine studies and documentation for managing port environments.

Our story

MScience began in 2003 on the University of Western Australia campus.

Our company was created to link marine scientists to the resource industries requiring their specialist expertise.

When MScience began, we provided academic input into designing and interpreting studies and monitoring developments within tropical and subtropical marine ecosystems.

Today, we are a full service company, with a strong history of supporting successful development and implementation of major resource projects across Australia’s northwest.

MScience brings together the research and technical experience of senior marine scientists with the practical expertise of field staff. Our teams are experienced in operating under rigorous Health Safety Environment controls, onshore and offshore.

We have been involved in the majority of dredging and construction projects in Western Australia’s Pilbara coast since 2003. This is the foundation on which we have built our extensive intellectual property.

OUR OPERATING ETHIC

Our commitment is that the senior staff who design and establish a project maintain the intellectual control of that project throughout its life. For that reason, we limit the number of large projects we take on at any one time.



Our services

- Water quality studies: in situ or boat-based
- Sediment quality assessment
- Monitoring programs: routine or during construction
- Investigative studies to link causes and effect
- Habitat mapping and impact predictions
- Water and sediment chemistry and ecotoxicity
- Plan production: EQMF; DSDMP, EMPs

Field programs can be operated using our commercially trained divers or as fully diver-less solutions, depending on areas of operation and client preferences.

Our experience working as part of port and dredger teams - and for government clients - means we understand the need to balance operations with conservation

SPECIALIST AREAS

Design and interpretation

The design of our programs relies on experiences with past baseline or execution programs to structure data gathering to deliver project compliance needs in a cost effective manner. Our methods of data interpretation are built on a history of testing mandated regulatory triggers through rigorous statistics, and an understanding of what drives water quality – whether to State or Commonwealth specifications.

Ecotoxicity

Our understanding of chemistry and the biochemistry of toxicants means that we can design, conduct and interpret studies to produce meaningful outcomes without unnecessary expense. We understand that it doesn't always take expensive testing to quantify the risks of organics and metals contaminants in the marine environment.

Telemetry

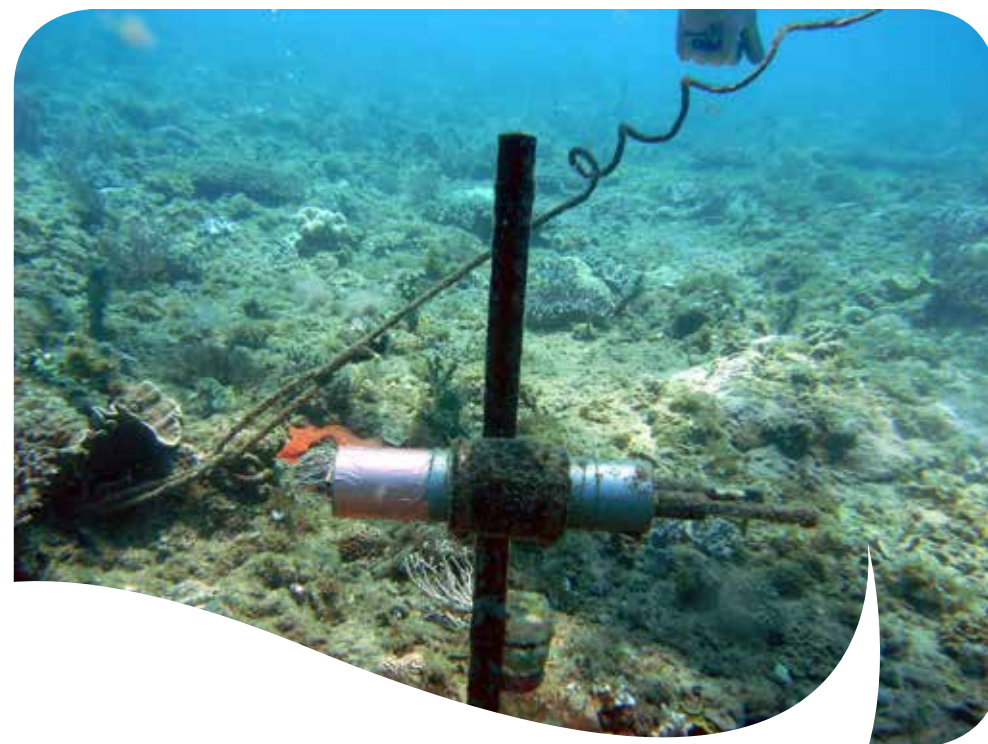
MScience and our instrumentation provider Fastwave developed the first successful reactive monitoring program based on telemetered instruments in northwest Australia. Those instruments ran continuously over a three-year dredging period, allowing the design to be refined to improve data storage, decrease maintenance and reduce wear and tear. As part of our real-time telemetry system, we now have a purpose-built database and automated reporting system.

Quality assurance

Water quality programs are often expensive, but the cost of bad data can be even higher. We maintain a variety of procedures – and expert staff to implement them – to ensure that faulty instruments or sample contamination do not create spurious results. Our quality control procedures are transparent and based on objective assessment of data.

Expert staff

We're able to deliver these services at a high level because of the expertise of our staff accumulated through working on some of Western Australia's biggest water quality monitoring programs. We've seen what can go wrong – and what works – during critical execution phases, and we build that experience into all our new projects.



RECENT MAJOR PROJECT EXPERIENCE - AUSTRALIA

Dredging projects

ON SLOW:

We provided expert advice in designing and resourcing the baseline water quality program, then worked for the dredging company in interpreting the daily monitoring reports coming in from over 20 telemetered water quality sites to manage dredging.

Client: Chevron Australia, Dredging International, Jacobs, URS

BARROW:

We conducted major post-dredging survey studies for two years on sediments and benthos around the Gorgon dredging project.

Client: Chevron Australia

DAMPIER:

We designed, conducted and interpreted the baseline and execution water quality monitoring for the Pluto LNG Development from 2006 to 2010. Our work included telemetered and logged monitoring at 25 sites, with a boat-based program designed to support contextual studies and link to calibration of water quality using MODIS satellite imagery.

Client: Woodside Energy

KIMBERLEY COAST:

We designed and implemented a program to characterise the baseline status of benthic habitats and waters around James Price Point for use in supporting a water quality model of biotic thresholds and for setting targets for water quality during dredging. A series of 12 in situ stations logging water quality over a 30 km stretch of coast has been in regular use since 2010. Boat-based programs and laboratory studies have been used to investigate the relationships between turbidity and light for various sediment types and to calibrate MODIS satellite imagery for plume tracking.

Client: Woodside Browse

Port reviews

(Australia and elsewhere)

We provided expert advice on environmental constraints to capacity increase in Port Hedland.

Client: Confidential

We reviewed potential port development sites for environmental suitability in India, South Africa and Mozambique.

Client: Rio Tinto Iron Ore



RECENT MAJOR PROJECT EXPERIENCE - AUSTRALIA

Permitting and management plans

OFFSHORE KIMBERLEY AND PILBARA:

We successfully developed environmental quality frameworks, environmental management plans and dredging permit documentation for ports including Dampier, Koolan Island and Cockatoo Island.

Clients include: Rio Tinto Iron Ore, Dampier Port Authority, Mount Gibson Iron, Cliffs Natural Resources

SEA DUMPING PERMITS:

We have designed, obtained approval for (SAP) and conducted numerous sediment quality studies in the Pilbara and Kimberley regions under the National Assessment Guidelines for Dredging and used the results to obtain sea dumping permits.

Clients: Dampier Port Authority, Rio Tinto, Woodside

Sediment and water chemistry

DREDGING COMPLIANCE:

We have spent more than three years at Dampier and two years at Onslow interpreting each day's water monitoring using models, metocean data and dredging data to identify whether dredging raised turbidity above compliance limits.

Clients include: Woodside, Dredging International, Rio Tinto

DISCHARGES:

At Onslow, we evaluated a variety of specialised water chemistry properties to determine design implications for reverse osmosis plants – intake and discharge – and sewage disposal in sensitive environments.

Clients: Chevron Australia, Bechtel

ECOTOXICOLOGY:

Ecotoxicology can be a difficult area in which to get the approach and methods right. We have run studies looking at the ecotoxicology of waste water, production water, biocides and elutriates from contaminated sediments. We also have experience validating predictions of numerical models from field measurements using surrogate chemistry when the contaminant of interest is difficult to assay.

Clients: Rio Tinto Iron Ore, Chevron Australia

Benthic surveys

We have undertaken extensive mapping of benthos within ports for environmental approvals, to demonstrate compliance with approval conditions and for planning purposes. We have used many techniques (including RoV/ tows/divers), depending on local circumstances.

Clients include: Dampier Port Authority, Chevron Australia, Anketell Port, Koolan Iron Ore, Cockatoo Iron, Woodside Energy



OUR SPECIALIST TEAM

DR JAMES STODDART

Chief Scientist

Port environmental assessments, marine impact monitoring, management planning.



DR DAVID MASTERS

Principal Scientist - Water

Water quality monitoring, impact thresholds, delivery of science outcomes.



DR CHRIS STODDART

Principal Scientist - Ecotoxicity

Water chemistry and ecotoxicology. Design and analysis of experiments.



OUR DETAILS

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