

# A Framework for Marine Environmental Management of Ports



## ISSUE

The Australian and Queensland governments are taking action to limit the impact of ports on the Great Barrier Reef. The recent Reef 2050 Long Term Sustainability Plan supports initiatives for industry commitment to improve practices for ensuring Outstanding Universal Value is an intrinsic consideration in port management and governance, transparent decision making and meaningful engagement with affected stakeholders. Specifically, the plan proposes actions to expand 'nested' integrated water quality monitoring and report card programs at major ports, such as the Gladstone Healthy Harbour Partnership, to guide local adaptive management frameworks and actions (WQA23). A consistent reporting performance-based framework is intended to be developed so it can be applied across agriculture, urban, ports and industry to measure management efforts to achieve best management practice through regional areas (WQA6).

## SOLUTION

O2 Marine recently applied an Environmental Quality Management Framework (EQMF) to and the West Australian Environmental Protection Authority (EPA) based on the Principles and guidelines of the National Water Quality Management Strategy (NWQMS), with particular regard to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ 2000).

An EQMF is a framework for the establishment of environmental values (EVs) and the identification of clearly expressed and spatially defined environmental quality objectives (EQOs) to guide decision making and provide common goals for management (EPA, 2005 ). The EQMF provides a basis for the development and implementation of environmental management strategies including: environmental performance monitoring and environmental impact assessment.

This EQMF provides a basis for managing the quality of the marine environment to the best practicable standard and consistent with community expectations. It is risk-based and flexible, and can be fine-tuned to address specific issues or management of entire areas.

Five environmental values typically form the basis of the framework from which broad environmental quality objectives are established and spatially defined. Environmental quality criteria that represent environmental quality thresholds of 'acceptability' are then established based on scientific, social and political imperatives. These thresholds are benchmarks against which environmental monitoring data are compared and evaluated using a report card format in order to determine the extent to which environmental quality objectives have been met. The key structural elements of the EQMF are shown in Figure 1.

O2 Marine recently applied the EQMF to develop a Marine Environmental Quality Management Plan (MEQMP) for the Port Hedland Industries Council (PHIC), an industry body established to manage cumulative environmental issues relevant to the Port of Port Hedland. The Port of Port Hedland is Australia's largest export port by annual throughput and the largest bulk minerals port in the world.

Based on guidance provided by the EPA, O2 Marine applied the following process for the development of the MEQMP:

- Establish Environmental Values, Environmental Quality Objectives and spatially define the Levels of Ecological Protection through community and stakeholder consultation;
- Develop a conceptual model of the pressures and threats from port activities to establish Environmental Quality Criteria using a risk-based assessment;
- Prepare monitoring programs to assess water quality, sediment quality, bioaccumulation of marine contaminants, subtidal benthic primary producers, intertidal benthic primary producers and marine fauna, for evaluating the results against the Environmental Quality Criteria;
- Detail the management objectives, roles and responsibilities for implementing the plan and the appropriate level of management response; and
- Define the reporting requirements.

## Environmental Quality Management Framework

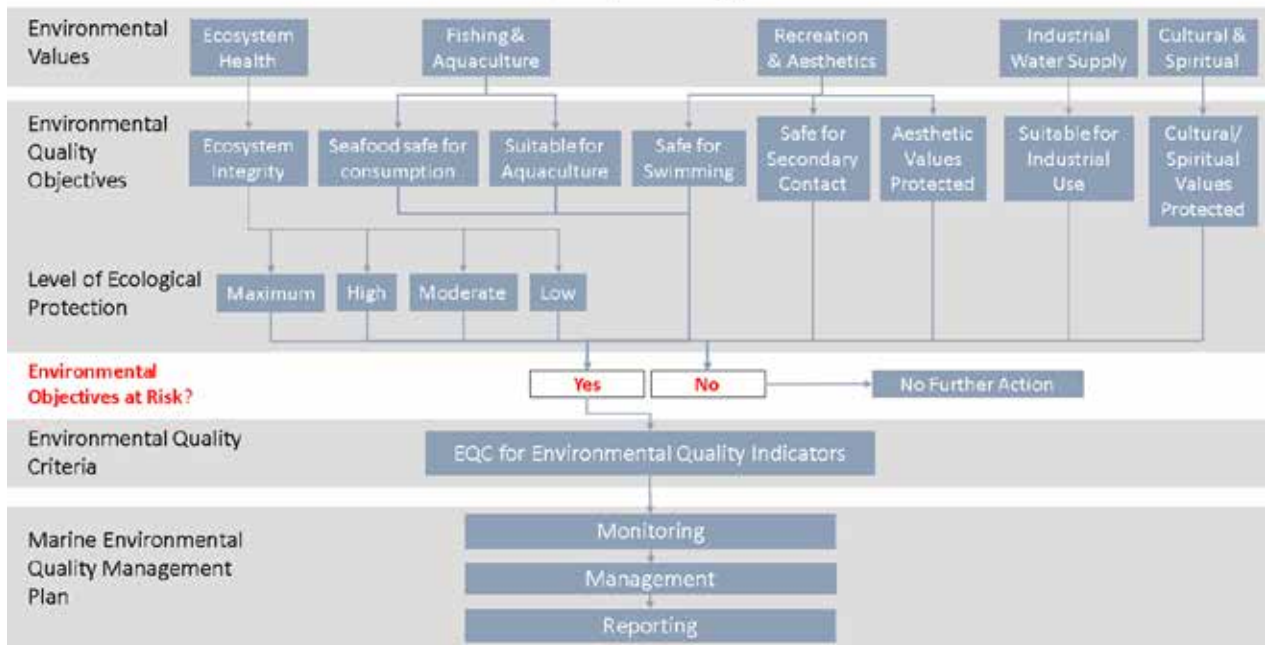


Figure 1 An outline of the Environmental Quality Management Framework

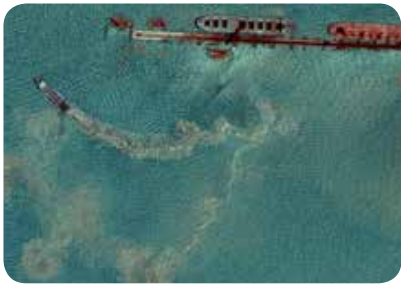
### BENEFITS

Incorporation of an EQMF for ports in Queensland would provide the benefit of adopting a simple and proven framework for implementing the Reef 2050 Long Term Sustainability Plan actions. The EQMF would facilitate management of environmental performance and the long-term planning and development of ports. The EQMF would be useful for:

- Development and implementation of environmental management strategies, including, performance monitoring and environmental impact assessment;
- A consistent and standardised approach for measuring and reporting on marine environmental quality across projects and regions;
- Providing a planning and management framework to guide future proponents in the design of their proposals and their monitoring and management programs and for port authorities to ensure that environmental quality is maintained at levels suitable for all users;
- Provision of a framework for considering cumulative effects and the environmental impact assessment of port developments in the long-term;
- Provides a framework for ensuring tenants and service providers are accountable for their environmental performance;
- Allows for monitoring, management and reporting on environmental quality that is meaningful, easily understood, and clearly identifies areas where environmental values are, and are not, being protected;
- Focusses attention onto those areas where environmental quality requires improvement, or in the case of development proposals, where predictions suggest that impacts on environmental quality may compromise the established environmental values;
- Offers a mechanism for coordinating the monitoring and management of multiple, sometimes mutually exclusive, activities;
- Cost and efficiency benefits through the implementation of one comprehensive port-wide environmental quality management plan that includes performance monitoring and management feedback loops for all relevant activities within the port; and
- The collection, collation and interpretation of monitoring data on a port-wide scale has potentially useful outputs for all parties (e.g. baseline data, calibration and validation data for modelling, etc.).

### NEXT STEPS

Should you be interested in hearing more about the EQMF for Port marine environmental management, O2 Marine would be pleased to meet with you to discuss how we can tailor our approach to meet your needs. Please contact O2 Marine Principal, Chris Lane at [chris.lane@o2group.com.au](mailto:chris.lane@o2group.com.au) or call on 0400 567 909 to arrange a meeting.



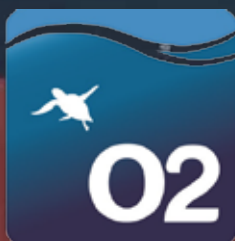
<sup>1</sup> EPA (2005) *Environmental Quality Criteria Reference Document for Cockburn Sound (2003 – 2004)*. A supporting document to the *State Environmental (Cockburn Sound) Policy 2005*. EPA, Perth, WA.


## ABOUT US

O2 Marine ([www.o2marine.com.au](http://www.o2marine.com.au)) is a marine environmental consulting company specialising in the design and implementation of cost effective and scientifically robust marine monitoring programs. Our staff have significant experience in design and implementation of marine environmental monitoring programs for ports located all around Australia. Our innovative approach to marine science is the opposite to 'business as usual', at O2 Marine we consider every project as an opportunity to 'DO BETTER' both for our client and for the marine environment.

O2 Marine is part of O2UDP ([www.o2group.com.au](http://www.o2group.com.au)), which brings together a partnership of highly specialised boutique businesses to offer a comprehensive and complimentary range of expert knowledge and innovation to the property, agriculture, infrastructure and resource sectors. We have offices in Brisbane, Sunshine Coast, Perth, Busselton, Toowoomba, Townsville, Mackay, Whitsundays, Papua New Guinea and Vietnam.

As part of O2UDP, we offer all the benefits of a larger, international consultancy, but with a technically focused, personalised level of service that our larger competitors are unable to achieve.



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