

PGM ENVIRONMENT

SHIP ENVIRONMENTAL MANAGEMENT AND COMPLIANCE EXPERIENCE

John Polglaze, the Principal of PGM Environment, has over 30 years of experience with ships and ports, including 18 years as a specialist environmental management adviser in Australia and overseas. This includes work with international and multilateral organisations, such as the International Maritime Organization (IMO) and the Secretariat of the Pacific Regional Environment Programme (SPREP), as well as Australian government agencies including the Commonwealth Department of the Environment (DoE), Defence and the Royal Australian Navy (RAN), the Australian Customs and Border Protection Service, the Department of Agriculture (DoA, formerly DAFF and the Australian Quarantine and Inspection Service [AQIS]), the Australian Fisheries Management Authority (AFMA), and the Australian Federal Police (AFP). He has considerable experience working for ship operators in the marine construction and offshore petroleum sectors, as well as ports and dockyards.

John's areas of expertise include environmental management and risk reduction aspects of ship design and ship operations, ship waste management, ship biofouling, marine anthropogenic noise, and ship decommissioning and disposal, particularly via sea dumping. His experience encompasses all aspects of environmental compliance management for ships spanning the full spectrum from initial concept development, through design, build, operations, refit, and maintenance, to decommissioning and disposal. John served in the RAN for over 18 years, during which time he amassed considerable experience with ship operations and maintenance, and he is a qualified and experienced commercial diver and environmental auditor, and a regular delegate to the NATO ship environmental management working group. He is a Chartered Marine Scientist and a Fellow of the Institute of Marine Engineering, Science and Technology.

The information below is a synopsis of the principal ship-related environmental management projects in which John Polglaze has had a key role, typically as project manager and lead technical specialist.

SHIP OPERATIONS



Great Barrier Reef Outlook Report 2014

John Polglaze was engaged by the Great Barrier Reef Marine Park Authority to review the activities of shipping and ports within the Great Barrier Reef Marine Park and World Heritage Area. Specifically, the purpose of this review was to analyse extant, emergent and forecast threats to the marine environment, and to assess the effectiveness of the management of these issues by the Authority and other agencies such as the Australian Maritime Safety Authority (AMSA) and Maritime Safety Queensland (MSQ).

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Shipping in the Great Barrier Reef Region

Noting the concern expressed by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and Australian regulatory agencies, PGM was engaged by one of the world's major resource companies to undertake a comprehensive assessment of the environmental risks and implications incumbent with current and projected future shipping activities within the Great Barrier Reef World Heritage Area. A particular focus of this study is the anticipated increase in shipping through the GBR in association with port developments at Gladstone, Hay Point and Abbot Point.



Dudgeon Point Coal Terminal, Hay Point

PGM was engaged by North Queensland Bulk Ports (NQBPs) to prepare a specialist report on ship and port operations as a component of the environmental assessment documentation for the proposed Dudgeon Point Coal Terminal (DPCT). This environmental review of shipping considered all activities related to the operation of international ships and harbour support craft, within the context of Australia's World Heritage obligations and the requirements of Commonwealth and Queensland marine environment protection and environmental assessment legislation.



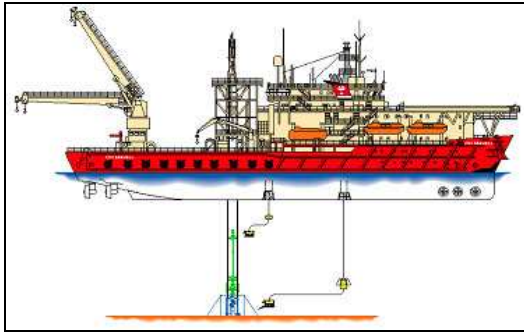
Defence Activities in the Great Barrier Reef Region and Marine Protected Areas

In collaboration with Defence and the Great Barrier Reef Marine Park Authority, John Polglaze prepared the original 2006 *Strategic Environmental Assessment of Defence Activities in the Great Barrier Reef World Heritage Area*, aimed at facilitating an ongoing Defence presence in the region. As a component of this project John Polglaze also addressed Defence activities in all other Commonwealth Marine Protected Areas. In 2012 he was engaged by Defence to prepare an updated Strategic Assessment.



Ship Movements Analysis - Timor Sea

Based upon AUSREP daily ship position plots, John Polglaze was commissioned to characterise and analyse ship movements around the Bayu-Undan gas field in the Timor Sea. The purpose of this analysis was to assist in determining the risk of collision of ships with the gas production facilities.



Review of Legislation Applicable to Light Well Intervention Operations

John Polglaze led the Australian component of an international review of legislation regulating offshore petroleum activities for Schlumberger Oilfield Inc. The review addressed:

- Cold venting at surface
- Subsea venting of gas
- Overboard produced water discharges
- Displacement/discharge of lubricator contents to sea



ADF Maritime Activities EMP

John Polglaze prepared the Environmental Management Plan (EMP) which assesses the environmental risks of all Australian Defence Force (ADF) maritime activities (addressing the activities of the RAN, Army, RAAF, DSTO, DMO and Defence contractors), and promulgates standard risk reduction and mitigation strategies for operators, planners, and commanders.



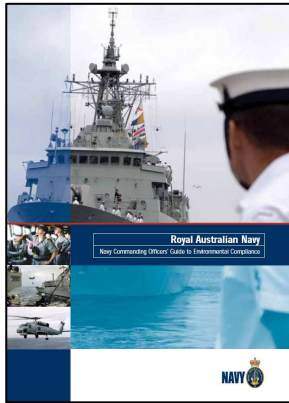
RAN Ship EMP

John Polglaze updated and expanded the 1999 Generic EMP for RAN ships, integrated it with the ADF Maritime Activities EMP. The 1999 EMP concentrated upon ship emissions, but the update expanded the scope to cover all activities undertaken by RAN ships with the potential for environmental impact, and codified standard risk reduction and mitigation measures.



Defence Activities in Jervis Bay Marine Park

John Polglaze was engaged by Defence to undertake a range of studies concerning the environmental management of Defence activities in Jervis Bay, a Marine Park. These studies encompassed the operation of small boats, mine warfare and amphibious activities, the operations of fixed-wing aircraft and helicopters, invasive marine species surveys and management, threatened species conservation, and ongoing scientific research and monitoring.



RAN Commanding Officer's Environmental Compliance Guide

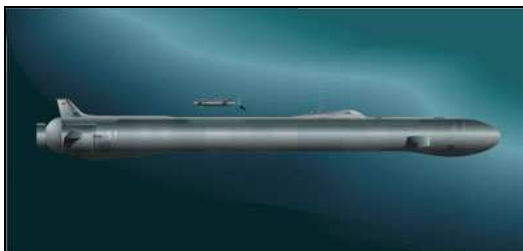
John Polglaze wrote and developed the RAN *Commanding Officer's Guide to Environmental Compliance*. The Guide presents details of how Naval activities, both at sea and ashore, can impact the environment and provides a useful first point of reference to alert Navy personnel to their environmental compliance responsibilities and how these obligations may be fulfilled.

SHIP ACQUISITION



SEA 4000: Air Warfare Destroyers

PGM has been engaged to advise the Air Warfare Destroyer (AWD) Alliance on the existing and future environmental compliance aspects and legal obligations of the build, introduction into service and operation and through-life support of these new ships. This follows on from other work John Polglaze has performed for the AWD Alliance over a number of years, with the initial taskings focused upon the assessment of environmental risks and evaluation of the compliance profiles of both the competing Existing and Evolved designs for the new destroyers submitted for the consideration by Government.



SEA 1000: Future Submarines

John Polglaze was engaged to provide advice on the environmental compliance aspects and performance requirements for the intended acquisition by Australia of 12 new submarines, with the first boat planned to commission in 2025. John assisted with concept development and the articulation of requirements.



SEA 1444: Replacement Patrol Boats

John Polglaze reviewed environmental compliance aspects of designs submitted for the RAN's *Armidale* Class patrol boats. The review not only considered existing and slated regulations, but also took into account environmental compliance requirements which could be reasonably forecast over the life-of-type.



JP 2048 Phases 4A/4B: Amphibious Ships

John Polglaze was engaged to advise the Project office on the environmental compliance aspects of designs submitted for the RAN's new 27 000 t Landing, Helicopter, Dock (LHD) amphibious ships. The review also considered environmental compliance aspects of both the requirements specifications and the ships' operational activities, with a particular focus upon activities in the Great Barrier Reef.



JP 2048 Phase 3: Landing Craft

PGM was engaged by the ADF to advise on environmental compliance obligations and risk issues stemming from the acquisition and operation of the Navantia designed LCM-1E, designated as the LHD Landing Craft (LLC) in Australian service.



SEA 1654 Replacement Tanker

John Polglaze was engaged to undertake an environmental compliance review of the design, modifications and introduction into Naval service of the replacement afloat support tanker, HMAS *Sirius*.



Royal New Zealand Navy MPSC Project

PGM was commissioned by the New Zealand Defence Force (NZDF) to advise on environmental compliance obligations and associated risk issues for the Royal New Zealand Navy (RNZN) Maritime Projection and Sustainment Capability (MPSC). This is essentially an Afloat Support Ship, intended to replace the tanker HMNZS Endeavour. The environmental compliance review needed to consider the operations of a tanker in areas where the most stringent and demanding environmental conditions apply, including the Great Barrier Reef, Antarctic waters, and California coastal areas.



Cape Class Australian Customs Vessels

John Polglaze was engaged by Customs to provide advice on environmental compliance and risk management issues associated with the development of the Replacement Australian Customs Vessel (RACV), to be known as the *Cape Class*, in the concept development phase of the RACV Project. This included consultation on behalf of Customs with Commonwealth marine regulatory authorities, including AMSA, DoE, DoA, and the Great Barrier Reef Marine Park Authority (GBRMPA).



Bay Class Australian Customs Vessels LOTE

John Polglaze was engaged by Customs to provide advice on current and emerging environmental compliance regulations which would need to be taken into account in the conceptual development and implementation of the *Bay Class* Australian Customs Vessels (ACV) Life of Type Extension (LOTE) Project.

SHIP BIOFOULING, BALLAST WATER AND INVASIVE SPECIES



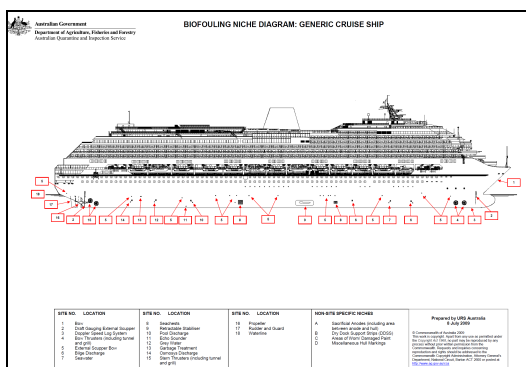
International Maritime Organization (IMO) Biofouling Management Guidelines

In July 2011, the IMO promulgated international *Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species*. John Polglaze was one of the specialists engaged by the Australian Government to provide technical advice during the initial stages of their development, and his advice is reflected in key aspects of the IMO Guidelines. This includes elements related to ship design and inspections, and the concept of ship biofouling record books, the model of which he first developed for the RAN, and which was later adopted in Australian national guidelines and subsequently internationally.



RAN Biofouling Survey and Management Protocols

John Polglaze was project manager for the RAN biofouling survey, a two-year program involving over 40 in-water dive and drydock inspections of RAN submarines and most classes of surface ships, ranging from 250 t patrol boats to 42,000 t tankers. This survey led to further work to develop RAN ballast water management policy and procedures, and underpins the deep understanding that PGM Environment has regarding biofouling patterns on ships and inherent ship biofouling vulnerabilities.



AQIS Biofouling Quarantine Controls

John Polglaze was engaged by (then) AQIS to undertake several biofouling management projects. These include the review and amendment of the AQIS *National Border Biofouling Protocol for Apprehended and International Vessels Less Than 25 m in Length*, and the development of a suite of generic vessel biofouling niche inspection diagrams. The purpose of these diagrams was to assist Seaports Inspectors with field inspections and biofouling risk assessments for vessels arriving in Australia.



Hazard Analysis for Marine Biofouling Pests in the Australian Petroleum Industry

DAFF engaged a project team incorporating John Polglaze to conduct an over-arching review and evaluation of the biofouling and IMS risks presented by all phases and aspects of the operations of the offshore petroleum sector in Australia. This review was the precursor to the development of Australian national biofouling management guidance measures.



National Biofouling Management Guidelines

Following the petroleum biofouling and IMS hazard analysis, DAFF engaged a team led by John Polglaze to develop the *Australian National Biofouling Management Guidance for the Petroleum Production and Exploration Industry*. This included extensive consultation with industry and regulators to ensure that the measures developed were realistic and effective. Assisted by John, DAFF used the structure and layout developed by John for the petroleum guidelines as a template for the *National Biofouling Management Guidance for Non-Trading Vessels*.



Ship Biofouling Inspections and Risk Assessments

John Polglaze is routinely called upon by industry and regulators to advise on biofouling risk and associated management issues for the movement of ships, oil rigs, dredges and other floating and immersible equipment to and within Australia. This often involves in-water dive or drydock biofouling inspections, typically at overseas dockyards. He has undertaken around 200 ship biofouling inspections and risk assessments.



RAN Ballast Water Compliance Review

John Polglaze reviewed the policy, operational and technical implications for the RAN from the introduction of national and international controls on the discharge of ship's ballast water. The report examined all existing and planned future ship classes to determine their compliance requirements and proposed management solutions. This project was undertaken for Fleet Command.



IMO GloBallast Programme

John Polglaze was a key member of the project team which undertook the GloBallast Ballast Water Risk Assessment Demonstration Projects for the IMO, supported by the United Nations Development Program (UNDP) and the Global Environment Facility (GEF). The program involved ballast water risk assessment projects in ports in Brazil, China, India, South Africa and Ukraine, and culminated with the 1st International Ballast Water Risk Assessment Workshop in Melbourne, during which John chaired the session on biofouling.

SHIP WASTE MANAGEMENT



Pacific Islands Ship Waste Management

John Polglaze led a project team which considered all aspects of ship waste management in the ports of 20 small Pacific island states and territories, with the project area extending from Palau in the west to French Polynesia in the east. This project was an initiative of the IMO and the Secretariat of the Pacific Regional Environment Programme (SPREP). The project delivered an outcome for SPREP and the IMO to provide more realistic and sustainable means of managing ship-sourced oily waste, sewage and garbage in the Pacific islands area, and resulted in the revision of MARPOL regional cooperation arrangements.

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LPA Solid Waste Disposal Systems

In collaboration with ATSA Defence Services, John Polglaze reviewed solid waste generation characteristics and compliance requirements for the RAN's two LPAs, HMA Ships *Kanimbla* and *Manoora*. The ships need to be able to support 650 personnel for 14 days without any garbage discharges to sea. The solution provided by John and ATSA and endorsed by the RAN involved a new, integrated solid waste equipment fit within very tight weight and space restrictions, coupled with changes to ship management procedures.



ANZAC Class Frigates Solid Waste Disposal

In collaboration with ATSA Defence Services, John Polglaze was engaged to advise on the development and installation of new equipment to better manage solid waste in *Anzac* Class frigates.



RAN Ship Garbage Management Review

John Polglaze was engaged by the Navy to undertake a comprehensive review of RAN ship garbage management policies and procedures. This review spanned the full spectrum of management, encompassing training and awareness, garbage sources, ship garbage stream quantities and composition, onboard processing equipment and processes, and shore transfer. The review resulted in a series of recommendations intended to assist the RAN to better manage ship-generated garbage in a manner consistent with ship safety, habitability and operational requirements.

MISCELLANEOUS SHIP ENVIRONMENTAL MANAGEMENT ISSUES



RAN Ship 'Green Passport' Requirements Review

The RAN commissioned John Polglaze to undertake a review of the merits of adoption by the RAN of the International Maritime Organization (IMO) ship 'green passport', or a compatible equivalent. The review of the 'green passport' requirements, otherwise known as the Inventory of Hazardous Materials (IHM), encompassed the mechanisms by which the system could be adopted, including modification of existing RAN hazardous materials documentation and recording processes.



RAN Ship Energy Efficiency Review

John Polglaze led a pilot study into RAN ship gaseous exhaust emissions profiles, specifically aimed at determining if there was any environmental benefit or reduction in atmospheric pollutants if ships alongside in Fleet Bases used shore power supplies or relied upon onboard generators. For the Australian electricity generation and distribution network, the study found that net environmental benefit accrued from running onboard diesel generators, instead of relying upon shore supplies.



Marine Anthropogenic Noise - General

John Polglaze is recognised both nationally and internationally for his work on the environmental assessment and management of marine anthropogenic noise, including the activities of ships and aircraft (including sonar and explosives), petroleum activities, port developments and operations and coastal infrastructure. He has undertaken environmental assessments and assisted with the development of national policies and management procedures, such as *Australian National Guidelines For Interaction Between Offshore Seismic Exploration and Whales*. John has spoken on this subject, often by invitation, in Australia, the United States, Italy, Denmark, Ireland, Latvia and the Netherlands. He is a regular invitee to NATO seminars on this subject (even though Australia is not a member of NATO), and also speaks at various industrial conferences and seminars.

SHIP DECOMMISSIONING AND SEA DUMPING ASSESSMENTS



RAN Ship Decommissioning and Disposal

John Polglaze prepared a review of environmental compliance obligations and liabilities attendant to the decommissioning and disposal of the frigate HMAS *Canberra*. On the basis of this work, John was commissioned by Navy Headquarters to prepare a more expansive package of environmental assessment and advice concerning all aspects of the decommissioning and disposal of warships and naval auxiliaries.



Sea Dumping Assessments

John Polglaze has been involved with the sea dumping, variously as weapons targets, artificial reefs or for their disposal, of around 20 ships and smaller vessels, offshore petroleum infrastructure, and a broad diversity of other materials. This role is typically discharged as a technical adviser and compliance inspector for DoE, the Commonwealth regulator, but he also regularly provides both formal and informal advice to a range of other organisations and government agencies considering the sea dumping of ships and other equipment.



Apprehended Foreign Fishing Vessels

The Australian Fisheries Management Authority (AFMA) contracted John Polglaze to evaluate sea dumping options for the disposal of apprehended illegal foreign fishing vessels (IFFVs). This included analysis of methods of sea disposal and their strengths and weaknesses, as well as development of a suite of sea dumping site selection tools and vessel preparation guides. John worked closely with a number of Commonwealth agencies, including Customs, Defence, Border Protection Command (BPC), AQIS/DAFF, DoE, DFAT and Attorney-General's.



Suspected Illegal Entry Vessels

Based upon work with the sea disposal of IFFVs, BPC, within the Australian Customs and Border Protection Service (ACBPS) contracted PGM to evaluate sea dumping options for the disposal of Suspected Illegal Entry Vessels (SIEVs) in northern Australian waters.



MV Pong Su

John Polglaze was engaged by the AFP to advise on all aspects of the sea dumping as a weapons target of MV *Pong Su*, the 6000 t North Korean freighter apprehended smuggling heroin into Australia. He was responsible for obtaining the Sea Dumping Permit, coordination of ship preparations and Navy and Air Force involvement, liaison with Commonwealth and NSW regulators, and oversight of the movement and supervision of the ship within Sydney Harbour. The ship was successfully prepared, including the removal and tank cleaning of over 1000 m³ of heavy fuel oil and oil-contaminated water, in two months. *Pong Su* was sunk in 2006 by Royal Australian Air Force F-111 strike aircraft.

Photo credits: John Polglaze, AFMA, AQIS, ASC, Austal, Customs, BMT, DoA, Department of Defence, DoE, Helix ESG, Mercator Marine, Mining News, Motorships, Offshore Technology, Navantia, URS

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