

Dr Daniel Spooner

Managing Director – Australasian Marine Associates

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Overview

Dr Spooner is a marine specialist who has played a key role in delivering some of the most significant coastal infrastructure projects in Australia. Daniel has over 15 years' of experience and has an academic background in marine environmental chemistry and coastal processes. He has held senior positions within the private consulting sectors and State Government Departments and Corporations. Many of the roles have involved supervision of teams, oversight and guidance of marine environmental and engineering works in the nearshore environment. His experience allows an easy transition from the technical leadership, which are used to describe the site characteristics into the civil design and construction/dredging requirements for a project

In 2014, Nearshore Marine Science Pty Ltd joined alliance partner Atlantis Consultants Pty Ltd to formally incorporate Australasian Marine Associates Pty Ltd (AMA). The key philosophy of this company is to deliver excellence in marine consulting services through alliance partnerships that bring the best team for each project.

The Managing Directors of AMA are also the Principal Marine Specialist and have combined professional experience exceeding 35 years. They have extensive networks of like-minded professionals that they team with to deliver high quality outputs at very competitive commercial rates. Further information on AMA can be sourced from www.australasianmarineassociates.com.au.

Fields of Special Competence:

- Dredging – TSHD, CSD, Backhoe hydrodynamic model interpretation and management
- Nearshore reclamation – WQ and Acid Sulfate Soils
- Environmental Approvals – applications and trouble shooting
- Environmental Management Plans/Systems
- Environmental Auditing
- Dredging project – environmental monitoring and approvals
- Water quality sampling design, scientific data interpretation
- Estuarine and coastal lake processes
- Coastal eutrophication
- Environmental Impact Statements (EIS)
- Environmental project management
- Biogeochemical processes
- Science project coordination
- Fisheries research and climate adaptation

Certifications

Coxswain Certificate of Competency (Grade 1)

Education

PhD. Applied Science. Coastal Processes (Environmental Chemistry), University of Canberra (2005). Thesis: Nutrients, organic carbon and suspended solid loadings in two ICOLLS, NSW, Australia – Biogeochemical Responses.

BSc. (Hons) EcoChemistry, University of Canberra (2000). Thesis: Trace metal concentrations in the sediment and water column of Botany Bay, NSW, Australia.

BSc. Ecology and Resource Management (Water Science/EcoChemistry), University of Canberra (1999)

Experience

Marine Dredging Works

Australasian Marine Associates Pty Ltd

Managing Director – Principal Marine Specialist – November 2014 to Present

Client: Metro Mining

Timing: February 2018 to March 2018

AMA was awarded a contract by Metro Mining to provide environmental consulting services for supporting bed levelling works in the entrance of Skardon River, far north Queensland. Dr Spooner facilitated the role of Technical Lead for the development of a suitable environmental monitoring program. He also personally led the execution of the monitoring program and developed the technical report that summarized the outcomes.

Client: Gold Coast Waterways Authority (GCWA)

Timing: September 2017 to Present

AMA was awarded a contract by GCWA to provide environmental consulting services for supporting maintenance dredging works in Labrador Channel and North Channel. Dr Spooner facilitated the role of Project Manager/Director and led all aspects of the works. The works involved the development of a suitably designed environmental monitoring program, to satisfy both the client and the State Government regulators. The works also involved the design and execution of a sediment sampling and analysis program to characterise the dredge area prior to works. Leading up to the works AMA was also responsible for undertaking seagrass meadow surveys of the areas that may be impacted by dredging works. During the dredging works AMA has been engaged to execute the environmental monitoring program to ensure environmental harm does not occur.

Client: City of Gold Coast (CGC)

Timing: April to December 2017

AMA was awarded a contract by CGC to provide environmental consulting leadership leading up to, and during, the Palm Beach and Northern Beaches Sand Nourishment Project. Dr Spooner facilitated the role of Project Manager/Director and led all aspects of the works. The works were initiated by the development of a suitable Environmental Management Plan (EMP). The EMP needed to satisfy the regulator permit conditions, and ultimately aid in the execution of the dredging works to ensure environmental harm was minimised. Dr Spooner led the science regulator interactions during the final stages of the EMP approval process. During the dredging works Dr Spooner master the AMA commercial vessel and led the scientific water quality monitoring program. The monitoring program focused on turbidity, pH and Total Suspended Solids (TSS) up current of the dredge and at predefined compliance sites. Importantly, Dr Spooner was able to convince the client and the regulators that the focus of the monitoring should be on sensitive receiver, and not chasing dredge plumes along the beach. Dr Spooner also executed environmental audits of the dredging contractor (RN Dredging) to ensure they are operating in compliance with the project EMP and their own DMP.

Client: Queensland Traffic and Main Roads (TMR)

Timing: September 2015 – March 2016

Co-Project Manager for development of the Maintenance Dredging Strategy for The Great Barrier Marine Park World Heritage Area. AMA led the review of maintenance dredging monitoring data, development or a risk assessment, and the risk based monitoring process. We also contributed to the concise strategy document that TMR used for their stakeholder engagement process. Dr Spooner was involved in many stakeholder presentations and meeting in the State Ministers office to provide briefings on project

outcomes.

AMA were also engaged by the NSW DPI (Lands) to deliver Reviews of Environmental Factors for dredging in Yamba and Iluka Harbour, Clarence River New South Wales.

Client: Mungallu Truscott Airbase

Timing: March – April 2015

AMA was engaged to undertake a dredging feasibility study and marine ecology and sediment Investigation study in West Bay, Kimberley region, Western Australia. This project involved a targeted sediment sampling analysis program, bathymetric surveys, and critical examination of dredging and disposal options. Dr Spooner was involved in all aspects of the works, including field works and report.

Client: RN Dredging Pty Ltd

Timing: August 2015

AMA were engaged to undertake water quality monitoring for maintenance dredging in the Port of Dampier, for the Mermaid Supply Base. This work involved field based monitoring of plume intensity and extent and also the development of plume dissipation curves to demonstrate compliance with regular expectations. Dr Spooner was Project Manager and ensure all field work and report was executed in accordance with the client expectations.

Marine Construction

Client: Ostojic

Timing: March to June 2016

AMA was engaged by Ostojic to provide marine consulting service during the construction of a Defense Barge Landing at East Arm, Darwin. Dr Spooner was part of a three man team from AMA that managed the construction placement of the lower half of the barge landing (i.e. 40m x 20m). The construction approach required placement of 25 T precast concrete slabs (10m x 2.5m x 0.4m). During the works the AMA team worked closely with the Ostojic team and provided guidance on the most suitable methods for achieving the required outcomes (i.e. based on the client constraints).

Client: Allied Natural Wood Exports (ANWE)

Timing: June 2016 to Present 2017

The AMA Managing Directors joined the Managing Director of Foreshore Marine to deliver a wharf and conveyor reconstruction scope of work for a wood chip export mill on the south coast of NSW. In June 2016 an east coast low pressure system all but destroyed the wharf and conveyor on the southern shoreline of Twofold Bay, Eden NSW. Dr Spooner provided field support and project coordination, being present during all stages of the reconstruction program. He led the client interaction and project planning/scheduling, and also the project file system and QA/QC.

Sediment Sampling

Client: Gladstone Port Corporation (GPG)

Timing: February 2018 to April 2018

GPG awarded AMA Project Management and delivery of the 2018 Port of Bundaberg Insurance Trench dredging Sediment Sampling and Analysis Plan (SAP) and the implementation and reporting of the SAP. Dr Spooner was Project Manager and was involved in all aspects of the works. The works included the development of a suitable SAP to the satisfaction of the client and the State Government regulators. In addition, AMA executed the sampling, coordinated the analysis and delivered the technical report (SAP

Implementation Report).

Client: Gladstone Port Corporation (CGC)

Timing: November 2017 to January 2018

GPC awarded AMA Project Management and delivery of the 2017 Port of Gladstone maintenance dredging Sediment Sampling and Analysis Plan (SAP) implementation and reporting of the SAP. Dr Spooner was Project Manager and was involved in all aspects of the works. This SAP included all the major channels, in addition to Auckland Inlet, Gatcombe Head and the Gladstone Marina. It was a very substantial SAP that required a significant degree of coordination and logistical management.

Client: Gladstone Port Corporation (CGC)

Timing: December 2016 to March 2017

Project Management and delivery of the 2017 Port of Bundaberg Sediment Sampling and Analysis Plan (SAP) and implementation and reporting of the SAP. Dr Spooner was Co-Project Manager and was involved in all aspects of the works.

Client: Gladstone Port Corporation Pty Ltd

Timing: June 2015 to September 2015

Project Management and delivery of the 2015 Gladstone Marina and Auckland Inlet Sediment Sampling and Analysis Plan and the Port of Bundaberg Sediment Sampling and Analysis Plan and Offshore Infauna and Seagrass Surveys. Dr Spooner was Co-Project Manager and was involved in all aspects of the works.

Client: City of Gold Coast (CGC)

Timing: June to September 2016

AMA was awarded a contract by CGC to provide geotechnical investigations, which include sediment sampling and analysis and marine sub-bottom profiling (seismic reflection surveys) for Palm Beach Submerged Control Structure (PBSCS) at a number of locations within the nearshore environment. The data generated by the project provided a basis for engineers to determine more accurately the nature of the sand within, and nearby, the proposed site for the PBSCS. Leading expertise for sub-bottom profiling providing unprecedented insights into the sub surface sand and rock environment in the area. The PBSCS is currently on track to be implemented in 2019.

Client: NSW Department of Primary (Lands)

Timing: January 2015 – January 2016

Project Manager for the Eden Geotechnical, Geophysical and Environmental Studies, Eden Breakwater Wharf Extension. This engagement involved the production and delivery of a Review of Environmental Factors, EPBC Referral, offshore hydrodynamic modelling of dredge material disposal plumes, sediment sampling and analysis program (design and implementation), Sea Dumping Permit, Environmental Protection Licence and Permit to Harm Native Vegetation Permit applications, Geophysical (side scan sonar, multibeam, magnetometer and resistivity) and Geotechnical Investigations (overwater PQ3 drilling to 40 m below seabed, using our Jack-up Barge), Management Plans to support the permitting process. The NSW DPI (Lands) engaged AMA to provide overall project leadership during the pre-works to support both the engineering design and environmental permitting process. All permits have been secured.

Client: Queensland Alumina Limited (QAL)

Marine Sampling

Timing: June to September 2016

AMA was engaged by Ecosure to provide Marine Ecologist and Coxswain services during the annual environmental monitoring and sampling in South Trees Inlet. Dr Spooner delivered these services to Ecosure, which involved leading the marine sampling work using a commercial vessel. Water quality measurements and oyster sampling was completed to examine the potential for contamination from the QAL facility.

Client: Clayton Utz Pty Ltd

Expert Advisor - Legal

Timing: October – December 2015

AMA were engaged to lead the groundwater contamination assessment for the Barangaroo Expert Witness Statement for the Barangaroo Development Authority. This involved a critical review of groundwater well data and an assessment of contaminant concentrations and the potential for the nearshore receiving environment interaction.

Client: Mt Warning Tours Pty Ltd

Marine EIA

Timing: February 2018

AMA was engaged Mount Warning Tours to provide specialist environmental consulting services. Dr Daniel Spooner was Co-Project Manager and managed on site client interactions, site visit and technical reporting. The scope of work consisted of a preliminary Environmental Impact Assessment of the Mount Warning Tours activities within the context of the Tweed River system. A particular emphasis was placed on vessel movements and the generation of wakes and their potential to impact the shoreline.

Nearshore Marine Science Pty Ltd

Managing Director – Principal Marine Scientist - March 2012 to November 2014

Nearshore Marine Science Pty Ltd was founded by Dr Spooner in 2012. The primary client during 2012 and 2013 was Gladstone Port Corporation (GPC). During 2014 Dr Spooner was engaged by a variety of clients and a brief summary of these projects are provided here:

Client: Maritime and Port Authority of Singapore

Marine Dredging Works

Timing: January 2105 – April 2015

Contracted works: Project Manager – Specialist consultancy role for the Environmental Management and Monitoring Plan (EMMP). The EMMP is guiding Capital Dredging Works for the Tuas Port Development during 2015 to 2023. Daniel was on site in Singapore leading the Worley Parsons team during the initial setup phase. The Tuas Port Development Project is an ambitious project aiming to introduce additional berthing facilities to Singapore, and to do so 54 million m³ of dredging needs to be undertaken.

Client: Gladstone Port Corporation

Timing: Sep 2013 – Sep 2014

Contracted works: Environmental Leader for the Western Basin Dredging and Disposal Project Transition Team. Dr Spooner was selected by the project leader to be responsible for leading the transition process from the LNG Dredging Project Delivery team to GPC Safety Environment and Risk Team. This process focused on closing out permits, management of ongoing conditions and strategic scientific advice on Acid Sulfate Soil management/treatment in the reclamation. During this time Daniel coordinated a revision of the Acid Sulfate Soil Management Plan (ASSMP) to more accurately reflect the PASS risk assessment process and method for monitoring and detecting incidences that trigger the need for management

intervention. The revised ASSMP was submitted to the Queensland Department of Environment and Heritage Protection and approved in August 2014. In parallel with this work Dr Spooner co-authored a revision of the projects Biodiversity Offset Strategy to reflect the project activities and restructured the document to enable more clarity on objective, milestones and KPI's. Dr Spooner also facilitated a key role in coordinating the Project's Ecosystem Research Monitoring Program and co-authored a revised terms of reference and ERMP charter document.

Client: Swinburne University of Technology (Victoria)

Timing: February 2014, 2015 and 2016

Co-facilitator of the Port Engineering (Dredging Engineering) post-graduate course. Dr Spooner delivered a series of lectures during the intensive week-long course. The lecture topics included National Assessment Guidelines for Dredging (2009), Case studies for environmental assessment required prior to undertaking dredging related projects, and hydrodynamics modelling – how these models are constructed and how are they applied to dredging project.

Central Queensland University

Adjunct Research Fellow – 2016 to 2019

Daniel is engaged to facilitate a Project Directorship role for a sediment dynamic study within the Port Curtis (Gladstone) region. The sediment budget model will be a useful tool for quantifying and predicting both current and future sedimentation at the Port Curtis. It will also help support investigations examining opportunities to interact with the sediment pathways to avoid or reduce accumulation of marine sediments in the Port's navigational infrastructure. Daniel ensures that the outputs are scientifically sound and importantly of relevance to the ports industry during permit applications and regulatory interactions.

Client: Mungallu Truscott Airbase (MTA)

Timing: May 2014

Contracted works: Preliminary Feasibility Study – West Bay Barge Facility. This preliminary feasibility study conducted by alliance partners, Nearshore Marine Science and Atlantis Consultants, adopted a phased approach, which included an initial desktop study, followed by a field (sediment coring) investigation and data analysis. The marine desktop study was used to describe the physical marine environment surrounding the barge landing and adjacent estuary, as well as to establish the barge/s draft characteristics and access requirements. A site visit was then performed, to collect some preliminary data on the physical characteristics of the sediments by coring of sediments and to gain a snapshot of local current and tidal conditions, as well as undertake a site reconnaissance for examining alternate options for relocating the barge landing into deeper water.

Client: Gladstone Port Corporation (GPC)

Timing: June 2014

Contracted works: Direct Toxicity Assessment (DTA) Interpretive Report. This report drew together a series of Direct Toxicity bio-assays from within the Western Basin of Port Curtis. The DTA approach employed a range of species that provided a useful representation of the some of the taxonomic groups within Port Curtis (i.e. Barramundi - *Lates calcarifer*, Micro Algae – *Nitzschia closterium*, Bivalve tropical milky oyster- *Saccostea echinata*, Crustacean amphipod - *Melita plumulosa*, copepod - *Parvocalanus crassirostris*hipod, Sea urchin - *Heliocidaris tuberculata*). Overall the toxicology results from DTA test were largely clear of any potential toxic responses.

Specialist Academic
Delivery

Marine Construction
Pre-works

Environmental
Chemistry

Client: Lyttelton Port of Christchurch (LPC)

Timing: August 2014

Management Plans

Contracted works: Development of Dredge Operational Environmental Management Plans (DOEMP) for maintenance and capital works dredging campaigns. Using the experience gained from the two largest capital works dredging campaigns in eastern Australia Dr Spooner developed LPC's DOEMPs. Dr Spooner also visited New Zealand to participate in workshops that focused on developing a suitable environmental monitoring program. During his time in New Zealand he also visited the contracted hydrodynamic modelling service provider to provide guidance on dredge source terms and suitable ways for simulating dredge cycle times within the modelling domain.

Client: Aurizon Pty Ltd

Timing: December 2015

AMA were engaged to develop a Construction Environmental Management Plan for a major capital works dredging project at Anketell Point, Pilbara Western Australia.

Client: Gladstone Port Corporation

Timing: September 2014

Sediment Sampling

Contracted works: Port of Bundaberg Maintenance Dredging Sediment Analysis Plan. The sediments within the Port of Bundaberg area and entrance channel are routinely maintenance dredged, as well as the sediments immediately upstream of the Port, when deposited during flooding events. Prior to maintenance dredging, Nearshore Marine Science and alliance partner Atlantis Consultants implemented the SAP for 2014 and characterised the contamination status of sediments for offshore disposal.

Client: GPC Western Basin Dredging & Disposal Project – completed Stage 1A September 2013

Timing September 2013 to December 2015

Specialist Contractor

Role: Environmental Leader

Project Snapshot:

Dredge Spoil Reclamation: 17.45 million m³

Dredge Volume Offshore: 5.11 million m³

Project Duration: 856 days

Budget: > \$1 billion

Status: Completed Stage 1A early & under budget

As Environmental Leader for the LNG Project Delivery Team (LNG PDT), Daniel managed the environmental auditing, monitoring programs and associated requirements to ensure regulatory compliance. Daniel also played a key role in ensuring effective communication with GPC's environmental staff and the LNG Proponents. He guided the environmental monitoring for the project; ensuring outcomes are effective from an environmental, management, and operations perspective. Of particular note was i) the coordination of the hydrodynamic modelling of Cutter Suction Dredge (CSD) and Trailer Suction Hopper Dredge (TSHD) to enable comparative analysis of original EIS predictions. This also formed

the basis for fine tuning the operational dredging activities and is informed by dredging source terms ii) in addition, Daniel played an integral role in the dual water quality management approach – integrating light into the compliance based monitoring for the project. Daniel was directly responsible for coordinating the development of this work, generating the final scope document and flow chart diagram that illustrated the approach. He also managed the research work that focused on developing a genetic technique for managing seagrass light requirements. This is world-leading research that may change the way dredging projects are managed in the Western Basin and beyond.

A summary of specific tasks undertaken as the Environmental Leader LNG PDT include:

- Overall responsibility for the delivery of environmental aspects of the Project in a timely, cost effective and safe manner for main works LNG Dredging;
- Review initial compliance situation (March 2012) and ensure any shortfalls are addressed and an achievable environmental management program is set and maintained for the remainder of the Project;
- Overall control and management of the environmental scope of works to be completed;
- Supervise personnel involved in environmental auditing, to ensure all aspects of auditing are completed in a timely manner. If non-conformance is identified be responsible for ensuring steps are taken to remedy issue;
- Manage all aspects of the Dredge Technical Reference Panel and the Science Sub-committee;
- Be engaged in stakeholder management and facilitate this process by building strong, positive working relationships with key community, government and other stakeholders;
- Supervise environmental support staff and provide specialist advice for data visualisation and analysis;
- Chair and manage the weekly Proponent Environment Sub-committee meetings;
- Oversee water quality exceedance reporting process and make sure it's scientifically robust;
- Oversee reporting and data requirements for the project and lead the process for refining the reporting needs;
- Provide specialist advice on the technical aspects of the reporting received from service providers, particularly in relation to hydrodynamic modeling of dredging;
- Oversee the design and evaluation of the project monitoring programs;
- Managed and guided the content of the various project management plans (i.e. Water Quality Management Plan, Acid Sulfate Soil Management Plan, Environmental Management Plan and Dredge Management Plan);
- Contribute to the effective management of the Project's compliance and approvals systems and processes; and
- Ensure accurate and timely reporting standards are maintained throughout the project.

Department of Primary Industries – Fisheries Research Branch

Group Leader – Chemistry & Benthic Ecology 2010 - 2012

State Government

The Victorian Department of Primary Industries has a Fisheries Research Branch located at Queenscliff. During 2009 two significant climate variability related initiatives were funded by the Victorian government and various partner organisations across south eastern Australia (including the Commonwealth government). I was responsible for coordinating and leading the scientific input for the science based research. This involved working closely with research scientist and policy managers to ensure works being undertaken met scientific standards and corporate objectives. At the Fisheries Research Branch I was also leader of the Chemistry & Benthic Ecology Group which provides services for government and private consultancies group across Australia. A key responsibility for this group is the delivery of client reports for fisheries based monitoring for post construction phase of the Channel Deepening Project. I also took on a leadership role driving a staff engagement group that endeavours to enhance staff interaction and information sharing.

Further details on specific tasks undertaken at DPI include:

- Program Leader for the fish trawl program in Port Phillip Bay for the Channel Deepening Project. This involved overseeing all aspects of the field program, reporting and client management.
- Leading the scientific research and client interaction for the Fisheries Research Branch Climate Change Initiative Program. This involved designing environmental research programs, report writing, and management of the communications. I played a key role in communicating complex science using web based interactive tools and printed media. I have also delivered a range of stakeholder presentations to promote this government program.
- I was also the scientific representative for Victoria in the South East Australian Program for Marine & Climate Change. A key outcome from this group was a regional risks assessment of key fisheries.
- Management of the Chemistry & Benthic Ecology group involves managing the performance of 8 team members and their resourcing across projects. I am also responsible for ensuring work flow was maintained and tendering for new opportunities as they arise.

Port of Melbourne Corporation

Project Manager (Environmental Monitoring) 2008 – 2009

Specialist Contractor

The Port of Melbourne Corporation (PoMC) began a ~ \$1 billion project to deepen the shipping channels in Port Phillip Bay (PPB) on the 8 February 2008. As part of the approvals process a detailed monitoring program targeting key assets across PPB was initiated in November 2007. This required an investment of ~ \$100 million to deliver a program focused on key compliance based environmental monitoring (i.e. turbidity, air borne and underwater noise), and a suite of baywide monitoring programs across PPB (i.e. seagrass, water quality, nutrients, contaminants in fish, algal blooms, little penguins, fish stock and recruitment, plume intensity and extent, and Ramsar wetlands). I was responsible for the management and delivery of the Channel Deepening Projects (CDP) Quarterly Project Reports. These reports provide an overview of the CDP activities, including operational, communication, environmental monitoring, and management review activities. To delivery these reports effectively resource management and coordination across the CDP Environment and Communications teams was essential. The reports were reviewed by state and federal government agencies, and the final product released to these agencies and the broader public via the CDP web site. An Annual Report and Project Close-out Report were also required by the CDP Environmental Management Plan (EMP). I was responsible for drafting and coordinating team input.

Further details on specific tasks undertaken at PoMC include:

- Technical assessment of sediment contaminants and water quality issues;
- Management of contracts and reporting outcome for deep reef habitat impact and recovery assessment and scour/accretion assessment at the Entrance of Port Phillip Bay;
- Drafting of correspondence to senior government officials;
- Audits of EMP based notification logs;
- Drafting of project briefs, panel assessment, and probity auditor requirements;
- Dredge history analysis in the north of the bay;
- Detailed quality assurance / quality control assessment of analytical data production;
- Assessment of observations beyond expected variability generated by the baywide water quality monitoring program; and
- Coordination of bi-annual environmental monitoring management reviews that focused on discussing the significance of any observations beyond expected variability.

Sinclair Knight Merz (SKM)

Marine Scientist - 2006 to 2008

Marine Consultant

Duties included project management and provision of expertise in water quality and coastal processes. Contribution to developing ongoing business and maintaining client interactions was also a key focus area. During my time with SKM I was involved in a large range of project, a synopsis of the key projects and my involvement is provided below.

Environmental Flow Objectives for Major Estuaries in Port Phillip Bay and Western Port (2007). I was the Project Manager and primary author of all reporting for Melbourne Water as part of the Better Bays and Waterways plan for Port Phillip Bay & Western Port. Primary responsibility was to lead the project work and coordinate the delivery of all project outputs. This was an innovative project in a scientific environment where little work has been undertaken. For this project I established a linkage between SKM and Deakin University, involving Dr John Shearwood.

Channel Deepening Office - Port of Melbourne Corporation (2007). I was part of a secondment team during January 2007 to synthesis three technical reports for Plankton, Shallow Reefs, and sessile soft seabed communities. The report formed a critical component of the SEES for the Channel Deepening Project. This was an intensive assignment that required a very high level of accuracy and professional conduct.

Head Technical Report – Water Quality (2007) I was co-author of the Supplementary Environmental Effects Statement for the Port Philip Bay Dredging Project, Port of Melbourne Corporation. Primary role was data analysis and assessment of trends, summary statistics, and assistance in interpretation. As part of this project our team was also called upon to assess the result to water quality from dredge hopper emptying. We were also involved with an assessment of the likely water quality impacts of large ship movement in the Yarra Channel (i.e. resuspension of large quantities of sediment into the channel).

Stony Creek Backwash – Sediment Risk Assessment (2007) – I was the Project Manager for a targeted sediment risk assessment that focused on developing an understanding of the significance of trace metal, hydrocarbon, and PCB pollution within the backwash (i.e. sediment porewater, bulk sediment & surface water). This project involved the development of a collaborative link between Monash University Water Research Centre to enable the deployment of ‘peepers’ (i.e. specialised porewater collection devices).

Melbourne Desalination Project – Seawater Monitoring Program Audit (2007) – I led a two person secondment to Melbourne Water that critically review the water quality data being generated from the south eastern coastline of Victoria (i.e. baseline work for establishing the process design for the proposed desalination plant). The key tasks included:

- Summarising and assessed the Quality Assurance and Quality Control (QA/QC) outputs generated by the laboratories;
- Documenting the analytical methods adopted and assess their ability to meet the preferred Laboratory Report Limits (LOR), and highlighted major interferences and the methods suitability for seawater;
- An analysis focused on detecting erroneous data (i.e. outliers);
- Generation of summary statistics and illustrative plots to highlight any observed trends; and
- Assessment of data based on comparisons between other relevant background seawater concentrations (i.e. supplied by A. Longmore DPI Queenscliff).

Seawater Desalination Environmental Assessment and Planning Study (2007) Daniel was co-author of the Melbourne Specialist Report: Marine Studies. The initial task assessed the potential intake and outlet infrastructure sites at nine locations, within Port Phillip Bay, Westernport, and the open coast. A critical review of the potential impacts associated with the options was also undertaken, which ultimately contributed to the short listing process for final site selection.

Gold Coast Desalinisation Plant (2007). Daniel led the development of marine impact assessments for the. Primary role was to i) synthesis existing environmental assessments undertaken in the marine environment ii) help develop and coordinate new monitoring programs to improve scientific understanding of critical processes ii) help develop and coordinate baseline and ongoing monitoring programs. The results of these activities were delivered to the QLD EPA as part of the formal ERA application process.

Melbourne Desalination Water Mixing Project (2007). Daniel led the development of a water quality assessment program to determine the potential effects of introducing desalination water into Cardinia Reservoir. This involved developing a collaborative linkage between Monash University's Water Research Centre to develop a laboratory testing regime. It also involved coordinating and undertaking a field based sampling program targeted at water quality profile analysis, sediment sampling, and bank coring to characterise the sediment.

Mornington Harbour Environmental Effect Statement (2007) – Daniel was a team member for field based sampling and analysis program during dry, wet, and post wet weather conditions. I was the primary author of the report for the analysis and interpretation of the results that focused on nutrients, physico-chemical water quality, hydrocarbons, Organochlorines, microbiological indicators. This project also required an impact assessment using input from a detailed coastal processes study.

Blackwater Study – Loddon River (2007) – Daniel was a team member for a desktop review of the processes that govern blackwater events in freshwater streams. My primary responsibility was to review literature and synthesis a review, and develop conceptual models using Adobe Illustrator with base maps and symbols courtesy of the Integration and Application Network (ian.umces.edu/symbols), University of Maryland Center for Environmental Science. I made a significant contribution to the final conclusions and recommendations for managing flow regime to control the event and also field based assessment to improve risk assessment outputs.

Sea Turtle Management Plan (2007) – Daniel was the primary author of a Sea Turtle Management Plan for the Pluto LNG Development in Western Australia. Responsible for all aspects of the management plan.

Illuka Water Quality Monitoring Program Rationalisation Project (2007). Daniel was part of a team that assessed the current groundwater and surface water monitoring program. Major tasks involved the development of a logical database using existing water quality data. A systematic approach was employed to determine which sites could be removed or must remain based on groundwater hydrology and surface

water drainage patterns

Yarra River Planning and Environmental Services for the Recycling Water Business Case (2007). Daniel was part of the project team responsible for the assessment of two key components, including 1) River water vs ETP (Eastern Treatment Plant) water mixing – used mass balanced based approach to determine the water quality related consequences of introducing treated effluent into the river 2) Provided specialist input on the potential impacts to the marine environment for the various business case options.

Algal Bloom – Blind Bight Lagoon (2006). Daniel co-author the technical report that investigated the likely drivers of persistent macroalgal blooms. I provided specialist advice for assessing the cause and possible management option of controlling algal blooms in coastal ponds at Bligh Point. A report was delivered within the report. for City of Casey.

HMAS Cerberus – Sediment Dredging Project (2006). Daniel provided specialist advice to assessment potential impacts of removing depositional silts from wharf, marina and approaches in Western Port.

Fisheries Victoria Aquaculture Baseline Studies (2006-2007). Daniel was the primary author and co-manager of a series of baseline surveys and reports for aquaculture lease holders in Port Phillip Bay & Westernport. These projects involved site based sampling, data processing and data based development, interpretation of results and highly prescriptive reporting for State Government approvals.

NIWA Australia

Environmental Scientist (Water Quality & Coastal Processes) 2003 to 2006

The National Institute of Water and Atmospheric Research is a Crown Research Institute of the New Zealand government. Whilst employed by NIWA duties included environmental project management and provision of expertise in water quality and coastal processes. A substantial contribution to projects covering a broad range of NIWA science and marketing was also required. A synopsis of project activities and my involvement is provided below.

Remote Sensing of Vehicle Emissions (2005-2006). I led the marketing and Australian business development efforts for the remote sensing vehicle emissions testing technology initiative. My primary responsibilities included:

- Assessment of potential market and involvement in targeted marketing trips along the eastern seaboard of Australia;
- Identification of key potential clients; and
- Development of trial project and overall project management of resulting activities.

Decision Support for Modelling and Monitoring Assessments of Coastal Water Impacts (2006). I was a team member for developing a knowledge base for part of the Decision Support for Modelling and Monitoring Assessments of Coastal Water Impacts developed by the Queensland EPA. The project was funding by the Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management.

Biofish Expedition to Great Barrier Reef (2005). I was a team member for a scientific expedition in the Great Barrier Reef, deployed a ROV (Biofish) that actively measures a set of water quality parameters as it moves up and down the water column whilst being towed. The primary objective of this research was to compare two dimensional Biofish data with other water quality monitoring approaches (i.e. probes, satellite imagery).

South East Queensland Human Health Risk Assessment Project (2004 – 2005). I was the Project Manager for this project which was commissioned by the Moreton Bay Waterways and Catchment Partnership. This project established and implemented best practice mechanisms for assessing risk to human health values

associated with drinking, bathing and food consumption and for abating those risks.

Moreton Bay Sand Extraction Study - Phase 2 Sediment Geochemistry and Water Quality (2003-2004). I led a team involved in a sediment biogeochemical and water quality assessment of sand extraction in Moreton Bay. This project assessed the potential impacts of various sand extraction scenarios in the north eastern delta of Moreton Bay using current biogeochemical methods and innovative methods for calculating the nutrient fluxes caused by typical dredging activities.

Marine intake/outlet Assessment Projects (2003 – 2004) I have been involved a variety of these types of projects, including:

- Biofouling issues for the Marsden B Power Station cooling water system in NZ;
- Potential effects of fluoride discharged from fertiliser plants into marine environments; and
- Dissolved oxygen dynamic in Cockburn Sounds – technical review of the field assessment for oxygen fluxes (i.e. as part of the a priori studies for the proposed desalinisation plant).

University of Canberra

Research Officer (Environmental Chemistry) – 1997-2002

Duties included scientific based consulting, managing laboratory based contracts, supervising and coordinating team based activities, formatting and production of lectures, tutoring biological, chemical and science communication. A synopsis of project activities and my involvement is provided below.

Environmental Management Plans (EMP) (2002 – 2003). Scientific advisor for two coastal lake EMP's on the south coast of NSW. I was responsible for data interpretation and synthesis. I was employed as a specialist in coastal lake water quality and catchment discharges of nutrients.

Coastal Lake Environmental Study (2000 – 2003). Daniel was the Project Leader of a multi-disciplinary study of two coastal lagoons on the south coast of NSW. The project focused on landscape processes and catchment discharges into coastal lakes, nutrient benthic flux assessments, water quality, and sedimentary biogeochemical assessment (i.e. denitrification). The project was funded by the Clean Seas Intuitive administered by the Natural Heritage Trust.

Catchment Loading Estimated to Coastal Wallaga Lake, NSW (2003). Provided consultancy advice on water quality and nutrient load estimation for a coastal lagoon on the South Coast of NSW.

Australian Guidelines for Water Quality Monitoring and Guidelines (2000). Daniel was a project team member for developing the Australian guidelines for water quality monitoring and reporting Vol. 2. This work was led by Professor Bill Maher. I was responsible for formulating the case studies that illustrate the fundamental principles and objectives of these guidelines.

Proposed sampling program for sewage water reuse, south coast of NSW, Australia (2000). Daniel designed a monitoring program to assess the potential impacts of sewage water reuse on Coila Lake Golf Course. The primary objective was to define the issue, set objectives and present an appropriate monitoring strategy that included a detailed budget.

Australian Capital Territory (ACT) urban stormwater lakes water quality monitoring program (1997 2000). Daniel was a Program Leader for in situ water quality measurements and sampling. I was also involved in the data analysis, interpretation, and reporting to the ACT government agency.

NIWA

Awarded New Zealand government funding for determining the nutrient assimilation capacity of algal

species grown in a advanced pond system receiving prawn farm wastewater in July 2005. This was a joint project between the QLD Department of Primary Industries and Fisheries and NIWA Australia

Awarded New Zealand government funding for developing DYRSEM-CAEDYM modelling of an ICOLLS focusing on benthic oxygen regime and the influence of carbon inputs from catchment sources in July 2004. This project also developed a series of narrative conceptual models to help illustrate the big picture and also specific internal lagoon processes

Part of the team that was awarded a \$60,000 research grant to examine catchment loading in coastal lagoons, and examine water quality responses (Clean Seas Intuitive- National Heritage Trust) 2003.

University of Canberra

Awarded a university postgraduate research scholarship (UPRS) to undertake a PhD study at University of Canberra in August 2001.

Awarded a \$10, 000 NSW Fisheries research grant to fund B. Sc. (Hon.) field research 1999.

Awarded a CRC for Freshwater Ecology Summer Scholarship award in 1997.

Professional Training

Internal Auditor (September 2012)

Statement of Attainment for conducting internal audits included:

BSBAUD402B Participate in a quality audit

RABQSA AU Management systems auditing

Auditing Environmental Management Systems (August 2013)

Certificate of Attainment:

RABQSA EM Environmental management systems

Statement of Achievement:

SAIEMS604A Conduct an environmental management system audit*

SAIEMS605A Evaluate an organisation's EMS performance*

Project Evaluation (2011) – Statement of Attainment for conducting evaluations. This course provided a practical grounding in the various techniques for conducting evaluations. This critical step in project management helps ensure the project outputs meet the expectations of clients and also maximise the effectiveness of communicating the messages to all stakeholders.

First Aid Certificate (2011) - Level 2

Influential Leader Program (2010) - This program is run by the Leadership Consortium, Australia's foremost business-based leadership organisation. This program involved a week of intensive interaction that provides functional business leaders with responsibilities for one or more teams and accountability to building strategic relationships, influencing and motivating others, and leading others. This program was only offered to 2 DPI state employees during 2010.

Scientific Publications

Spooner, D. R. W. Maher. (2009) Benthic sediment composition and nutrient cycling in an Intermittent

Closed and Open Lake Lagoons. *Journal of Marine Systems*. 75. 33-45.

H. Houridis & D. R. Spooner (2007). Maintenance Dredging and Water Quality Monitoring in Hanns Inlet, Western Port, Victoria. Coasts & Ports conference, Melbourne VIC.

Spooner, D. & R. B. Spiegel (2005). ICOLL Sediments do Breathe and Freshwater Inflows can be Suffocating. Proceeding of the 14th NSW Coastal Conference.

Maher, W., Mikac, K., Spooner, D., Foster, S., and Williams, D. (2005). Form and Functioning of small Australian Intermittent Closed Open Lake Lagoons in NSW. In: Holmes, N (ed.) *Australian Estuaries*. CSIRO Publishing, Melbourne.

J. Kirby, W. Maher, D. Spooner (2005) Arsenic occurrence and species in near shore macroalgae-feeding marine animals: *Environmental Science and Technology*. 39, 5999-6005.

Spooner, D. R. (2004) Corunna ICOLL – Catchment land cover and water quality (denitrification). *Estuarine and Coastal Sciences Association (ECSA) and Estuarine Research Federation (ERF) International Conference 2004 Estuaries and Change*, June 2004, Ballina, Australia.

Udy, J.W., M. Gall, B. Longstaff, K. Moore, C. Roelfsema, D.R. Spooner, S. Albert, (2004). Water Quality Monitoring: A combined approach to investigate gradients of change in The Great Barrier Reef, Australia. *Marine Pollution Bulletin* 51, 224-238.

Spooner, D. R. W. Maher, N. Otway (2003). Trace metal concentrations in sediments and oysters of Botany Bay, Australia. *Archive of Environmental Contamination and Toxicology* 45, 92-101.

Spooner, D., Maher, W. and Spurway, P. (2001). Nutrient, suspended solid and organic carbon loadings in two ICOLLS on the south coast of NSW, Australia – aquatic autotrophic and benthic sediment response. Proceeding of the 11th NSW Coastal Management Conference.