



*Challenging the status quo*

Excellence in environmental practice



# Concurrent Sessions



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## ABSTRACT SPECIFICATIONS

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# Offshore oil and gas industry face new compliance measures

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### Abstract:

Since the 2009 'Montara' incident, involving the worst uncontrolled release of hydrocarbons of its kind in the history of Australian's offshore petroleum industry, the energy sector has undergone significant legislative reform. The *Federal Government Response to the Report of the Montara Commission of Inquiry 2011* led to the establishment of the National Offshore Petroleum Safety and Environmental Management Authority (**NOPSEMA**), with responsibility to investigate and report on offshore environmental management practices.

The environmental management of offshore petroleum activities is regulated by the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) and its regulations. The regulations are an objective-based regulatory regime that requires that the environmental impacts and risks of petroleum activities are reduced to 'as low as reasonably practicable and an acceptable level'. Titleholders are required to demonstrate how environmental protection will be achieved through the implementation of appropriate performance mechanisms best suited to the particular petroleum activity. Titleholders are assessed against environmental performance outcomes, standards and measurement criteria set out in an environment plan.

As a result of recent legislative changes based on recommendations by the Montara Commission of Inquiry, NOPSEMA has wider powers of investigation and compliance monitoring while titleholders are subject to an express 'polluter pays' obligation, new financial assurance requirements and alternative enforcement mechanisms.

The paper will consider:

- The 'polluter pays obligation' and transfer of responsibility for compliance from operator to titleholder
- The duty on titleholders to notify NOPSEMA of 'reportable' and 'recordable' incidents
- Financial assurance requirements that must be satisfied by titleholders prior to the acceptance of an environment plan
- NOPSEMA's role in issuing directions and environmental prohibition and improvement notices, and
- New enforcement mechanisms, including civil penalty provisions, graduated criminal penalties, daily penalties and adverse publicity orders.

*Biography:*

Charmian Barton leads the Environment and Planning team in the Perth office of Norton Rose Fulbright Australia. She has over 15 years' experience advising government and corporate clients in the areas of environmental law, planning and heritage law, water law, waste to energy, and indigenous cultural heritage. Charmian regularly conducts due diligence for commercial and property transactions, provides strategic advice to clients on the management of contaminated land and assists clients with project approval processes, including compliance with state and federal environmental impact assessment requirements.

Charmian works with proponents of major infrastructure and offshore petroleum projects, waste to energy healthcare providers, manufacturers, retailers, owners and developers of brownfield sites, emissions-intensive industries and environmental consultants.

Charmian holds degrees in law and environmental science from Murdoch University and a masters degree from Harvard Law School. She has published widely on topics including directors liabilities and responsibilities, contaminated land management and sustainability.

Charmian is currently a board member of the Western Australian government's Mining Rehabilitation Fund Panel. In 2012 and 2013, Charmian was ranked as a leading lawyer – environment by *Chambers Asia-Pacific*. In 2014 and 2015, Charmian was selected for inclusion by her peers in *Best Lawyers in Australia* for the practice areas of Government, and Land Use and Zoning.



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## ABSTRACT SPECIFICATIONS

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# Operational considerations for environmental management – a coal seam gas perspective

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### *Abstract:*

Coal seam gas has been a popular topic for conferences for about a decade now. Most attendees of the EIANZ conference will have heard two or three presentations on topics such as 'Managing Associated Water' and 'Regulatory Burden in the CSG Industry'; indeed, I previously presented on two occasions on 'Environmental Management and Approvals in the Coal Seam Gas Industry'. The topic that is moving to the top of the list is: how will environmental regulation and management change now that the CSG-LNG mega projects now becoming operational after the peak of construction?

To manage the emergence of the CSG-LNG industry in Queensland, the State Government announced that it would adopt an adaptive approach to regulation. Industry responded by utilising resources to ensure that environmental impacts were understood and managed and project schedules were met.

So, how will things be different in the approaching operational phase of CSG-LNG projects in Queensland? How might regulation be different? What changes will industry make as it continues to deliver high quality outcomes and compliant infrastructure? How will environmental practitioners demonstrate the value of continuing to enhance environmental practices as technology progresses over time?

This presentation will outline the considerations as CSG-LNG transitions from construction to operational phase, whilst a rigorous regulatory regime and environmental best practice continue.

*Biography:*

Vicki is been a practicing environmental scientist for almost ten years. Graduating in Scotland with a Master of Arts (Honours) in Environmental Science with Physical Geography, then a postgraduate Master of Science in Managing Environmental Change, Vicki moved quickly into industry before moving to Australia in 2008.

With experience in industry, consulting and local government across four countries, Vicki has developed strong skills in challenging good environmental practice and ensuring high ethical conduct at all times. Vicki is currently a Senior Environmental Approvals Advisor for Origin Energy, based in Brisbane, focusing on the delivery of strategic environmental approvals to ensure the ongoing success of the Australia Pacific LNG Project's approvals framework.

As a Certified Environmental Practitioner, President of the EIANZ-SEQ Division and Deputy Chair of the EIANZ Advisory Council, Vicki is highly active in the EIANZ and continues to advocate for its value to members and the environmental industry as a whole.





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## ABSTRACT SPECIFICATIONS

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# Natural resource managers: magicians or mythical beasts?

Author: Alastair Buchan MEIANZ - CEnvP

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### *Abstract:*

There are many candidates for the title of 'natural resource manager'. Resource managers include those working as scientists or educators, government officials or lawyers, Traditional owners or indigenous rangers, land owners to community leaders, consultants or conservation volunteers and of course, includes our politicians.

Possibly a sticky NRM decision (the decisions that stay with us for decades) are a mythical beast that everybody has heard of but nobody has actually seen or experienced. Or maybe that view is too cynical and we simply need to clarify resource manager's roles and recognise the contributions different types of managers make. This paper reflects on our understanding of who can make 'sticky decisions' about how we manage our resources, whether they will actually make them and whether that is a good thing.

Natural resource managers make decisions based on a mandate or the power vested in them to do so. Their power described in a variety of governance arrangements. In some instances these governance arrangements set unrealistic expectation for a nominated manger, who must attempt to 'pull a rabbit from a hat' regardless of the constraints of the situation in which they work or their capacity to represent affected stakeholders.

Based on thirty years of work, across Australia and internationally, the author explores some of the difficulties with establishing effective NRM governance and decision making processes. Some novel (hopefully magical) alternative approaches to current Australian NRM governance models are suggested.

*Biography:*

Alastair has a background in systems ecology and water science. After 30 years managing natural resource issues, he has extensive experience as a staff and project team manager in policy, strategy and action plan development. Currently he works in the field of regional natural resource management planning and environmental strategy development.

He has worked as a practitioner and manager in the livestock and wildlife industries, on vegetation, threatened species, biodiversity, water quality, wetlands, hydrology, hydrogeology, soils, energy and green-house gas emissions and climate change adaptation.

Alastair spent 20 years employed as a scientist in five different organisations focused on inland and coastal Eastern Australia's environmental management. In each role, his charter included the design and delivery of programs which link individuals, business, NGOs, all levels of government and academic institutions together around the generation and exchange of scientific information which supports natural resource management decision making.

Establishing systems for adaptation and improvement of organisational governance, innovation uptake, and risk / opportunity management are Alastair's favorite areas of work.

Alastair's strong technical and scientific background is balanced with practical experience in academic, charity, multi-national and local, state and federal government organisations. This gives him a special talent for applying systems thinking and demand management approaches to highly complex situations.



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## ABSTRACT SPECIFICATIONS

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# **Lake Mealup 'Just add water': Managing acid sulphate soils on a wetland of significance in the Peel-Yalgorup Ramsar site, SW Australia.**

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Photo: Lake Mealup aerial looking SW direction with Lakes McLarty and Harvey Estuary in the background: September 2013

### *Abstract:*

Lake Mealup forms part of the Peel-Yalgorup wetland system on the Swan Coastal Plain in South Western Australia and is recognised under the Ramsar Convention as internationally

important for waterbirds. Declining rainfall since the 1970s and modified drainage led to the lake drying out each summer. The reduced water levels have also allowed the spread of the invasive bulrush, *Typha orientalis*. Exposure of the sediments has caused extreme acidification and loss of habitat for waterbirds. In response, a collaborative effort has started to restore the Lake and protect the future of the lake's ecological values.

The Lake Mealup Recovery Program was developed to respond to this decline. The program's greatest asset has been its range of stakeholders including government agencies, catchment groups, community organisations and private consultants. It follows an adaptive management approach which identifies targets for ecological health and monitoring triggers for management action. The key component of the recovery program is the diversion weir which allows controlled diversion of flow from the Mealup Main Drain into Lake Mealup to maintain water levels and reduce acidification.

Diversion of drainage water into the lake to maintain water levels in combination with a program of mechanical and chemical control of typha have resulted in a significant improvement in water quality and complete elimination of typha. Since then, the abundance of water birds has increased from typically less than 100 individuals before the recovery program to over 2,000 birds with 43 species recorded, including trans-equatorial migrants.

The Recovery Program has been a demonstration of successful cooperation between a range of groups working together under an adaptive management framework to achieve positive outcomes for a significant and important wetland. The future is looking good if we continue to optimise operation of the diversion weir, and maintain the monitoring program to determine the optimal management to maximise the ecological values of the lake.

#### *Biography:*

Heidi Bucktin is the Project Officer for Lake Mealup working at the Mandurah Work Centre for the Department of Parks and Wildlife and initiated the Lake Mealup Recovery Program in 2009. Lake Mealup is a cooperative program between the Lake Mealup Preservation Society, agencies, interest groups and surrounding landholders. Heidi has been working in NRM and specifically dealing with waterways and catchment management for 19 years.

Peter Wilmot is a scientist and member of the Lake Mealup Preservation Society. He has been actively involved in the management of Lake Mealup and surrounding bushland for 28 years.



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## ABSTRACT SPECIFICATIONS

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### **Refining climate change certification proficiencies**

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#### *Abstract:*

In late 2014, EIANZ's CEnvP scheme launched a Climate Change specialty (CEnvP (CC specialist)) that has started certifying applicants by interview and by reference to draft proficiencies. These proficiencies, based on EIANZ's Staged Training for Environmental Professionals (STEPS, were workshopped at a climate change conference (Iceland, 2014). They now need further refinement for Australia and New Zealand.

Delegates will have the opportunity to learn about the CEnvP (CC specialist) scheme, refine these proficiencies and find out how they can get tailored training.

Outcomes will be a clearer set of proficiencies and training that the CEnvP Board and SIS can develop for practitioners.

Draft workshop design (tested in Iceland) will be:

1. Introduce CEnvP (CC specialist), its proficiencies and Iceland workshop results in a plenary (15 minutes)
2. Attendees either workshop one of the 4 key draft proficiencies or all 13 proficiencies to: a) ensure they are clear and SMART, b) recommend clarifications, c) recommend source knowledge / training. An explanatory crib sheet will be provided (35 minutes).
3. Final discussion and questions (10 minutes)

Timings are based on 60 minute workshop. If 90 minutes, as in Iceland, the 2<sup>nd</sup> stage will be longer.

In 2012 and 2013, delegates to EIANZ Conferences workshopped the prospects for certification. The outcome was CEnvP (CC specialist) scheme. This workshop is different. It refines the existing scheme.

*Biography:*

- FEIANZ (10 years)
- CEnvP Board member (1 year)
- EIANZ Climate Change Special Interest Section (SIS) Executive responsible for certification (3 years)
- EnviroPartners Pty Ltd ([www.enviropartners.com.au](http://www.enviropartners.com.au)) director (8 years)
- On the journey of climate change training and certification (6 years)
- Environmental experience (25 years) plus Engineering (10 years) plus science (8 years)



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## ABSTRACT SPECIFICATIONS

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# **Codes of ethics – do they protect the professions, the public or the environment?**

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### *Abstract:*

Professionals have a role to contribute specialist knowledge and skills which can be trusted by clients, agencies and the community. In complex and controversial environmental issues, where specialists work together as multi-disciplinary teams, effective collaboration requires mutual understanding of the basis for value judgments. Environmental practitioners work closely with planners, scientists, engineers and others to analyse technical risks and evaluate impacts, taking into account (and sometimes trading off) economic and political factors. This process involves values, world-views and perspectives which may be drawn from various sources: educational training, group socialization processes within professions and organizations, professional codes of ethics, environmental activism, role models and personal morality. For professions with 'gate-keeper' control over educational qualifications (through accreditation of University courses), career paths can reflect a consistency of values from training, group socialization, professional codes, role models and mentoring. However for more diverse professions, such as that of environmental practice, groups typically go through a 'professionalisation' process at some stage, where development of a code of ethics has helped define their area of practice and identify shared values, as occurred within EIANZ when the Codes were revised in 2012.

As part of research into the ethics of professional environmental practice, the codes of ethics of several professional institutes have been compared, with particular emphasis on the extent to which they reflect emphasis on protecting the reputation and credibility of their own members, on benefitting the community or on maintaining/enhancing the environment. This comparison challenges two preconceptions: (a) that ethical responsibilities towards the natural environment are unique to the environmental profession; and (b) that professional codes per se provide effective guidance regarding moral responsibilities regarding long-term environmental sustainability.

### *Biography:*

Alan Chenoweth BAgrSc, GDLA, MURP, CEnvP, RegLA, FEIANZ, FAILA, FAIH, FPLA, MPIA is a Senior Principal of Cardno, a Brisbane-based international consultancy firm, and has over 35 years multi- and inter-disciplinary experience integrating ecological, landscape and park/open space studies with town planning and impact assessment. He currently chairs the Certified Environmental Practitioner Board, and has held office in a range of professional institutes over the past 30 years, including implementation of certification or registration schemes in Australian Institute of Landscape Architects, Australian Institute of Horticulture and EIANZ. Alan is a Fellow of four professional institutes and a Churchill Fellow, holds the EIANZ Simon Molesworth Award (2008) and the AILA (Qld) President's Award (2005) and is an Honorary Corresponding member of the Landscape Institute (UK), the latter awarded for his role in re-establishing the International Federation of Landscape Architects. Project teams under his leadership have also won several PIA and AILA Project Awards, and he has served on the Queensland Board for Urban Places and the Environmental Defenders Office (Qld) Committee. Alan has considerable experience as expert witness in Court Appeals, and his consultancy roles are currently focused on landscape and visual impact assessment. He is enrolled as a PhD student at Griffith University, researching the ethics of professional environmental practice, supervised by Prof. Darryl Low Choy and Assoc Prof. Donna McAuliffe.





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## ABSTRACT SPECIFICATIONS

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# Rapid assessment of a large industrial manufacturing site using wms-lu passive soil-vapour samplers

Authors: Matthew B. Collyer<sup>1</sup>, James E. Blackwell<sup>1</sup>, Peter A. Southern<sup>1</sup>,  
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### *Abstract:*

Edge Group completed a preliminary assessment (PA) of an active industrial facility to investigate potential soil and/or groundwater impact sources, previously identified in groundwater. Contaminants of concern were PCE, TCE; DCE; VC; volatile TRH; and BTEX-N.

To perform a PA across the Site, while minimising disruption to operations, a passive soil-vapour assessment (PSVA) was completed using small diameter hand drill driven techniques for sampler installation. Soil samples were also collected where possible.

Waterloo Membrane Sampler–Low Uptake (WMS-LU) samplers were selected for the PSVA for the following reasons:

- The low uptake rates were ideal for the clayey Site conditions (minimising potential starvation effects);
- Samplers analysed in Australia using a NATA accredited method; and
- The results provided semi-quantitative data, allowing initial screening against published criteria.

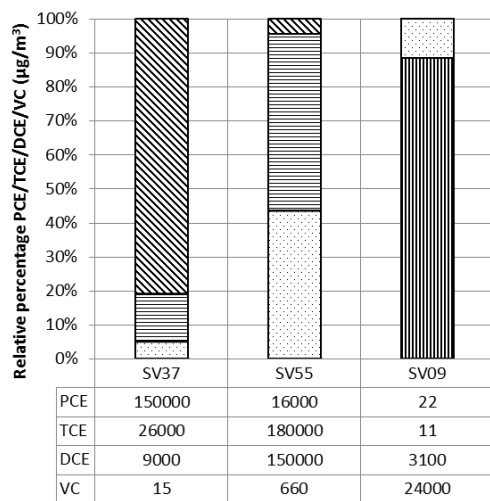
The assessment included deployment of 73 samplers in a combined grid and targeted approach, making this one of the largest single-site deployments of WMS-LU samplers completed to date in Australia.

The soil-vapour and soil results indicated a predominating groundwater source, as limited soil impacts were noted. **Table 1** summarises the results of the PSVA, showing the range of recorded soil-vapour screening criteria exceedances at the Site.

**Table 1. Soil-vapour screening criteria exceedances – concentration ranges**

Analyte	Units	Screening Criteria	Concentration Range (> criteria)
PCE	µg/m <sup>3</sup>	8,000	16,000 – 150,000
TCE		80	110 – 180,000
DCE		300	330 – 150,000
VC		100	110 – 24,000
TRH F1 (C <sub>6</sub> -C <sub>10</sub> less BTEX)		680,000	850,000 – 11,000,000

The soil-vapour results (contaminant isopleth plots generated by SiREM) correlated with known potential source areas, and also identified impact in two previously unsuspected source areas. The data also provided an indication of the degree of degradation of chlorinated solvent impacts (**Figure 1**).



**Figure 1. Typical PCE, TCE/DCE and VC dominated soil-vapour results, showing variability in contaminant type/degradation; and example isopleth plot for TCE in soil-vapour (dotted line represents adopted criterion, units in µg/m<sup>3</sup>) (after SiREM 2015)**

The PSVA achieved the following:

- completion of a PA of potential soil and/or groundwater source media;
- rapid site-wide screening while minimising disruption to operations;
- identification of areas of chlorinated solvent and petroleum hydrocarbon soil-vapour impact;
- Soil-vapour results across a wide concentration range in low permeability geology, without starvation effects; and
- Cost saving over traditional methods, while providing a greater data resolution.

*Biography:*

Matthew is a Principal Environmental Consultant at Edge Group Pty Ltd based in South Melbourne, VIC, Australia.

With over 13 years of experience working in environmental consulting, working predominantly in the contaminated land sector, Matthew has been involved in site investigation and assessment (soil, groundwater and soil-vapour), remediation/mitigation and project/client management roles, working in the UK, Europe, Asia and Australia.

Matthew has previously worked for key multi-national consulting companies (GHD, ERM and Golder Associates) both as a member of field staff and in senior/technical roles, providing technical support for site investigations and project management for wide a range of projects from small sites for private individuals up to large budget project sites for global clients.

Matthew has worked for a wide range of clients including local, state and national authorities (inc. City of Yarra, City of Ballarat, Cardinia Shire Council, VicUrban/Places Vic and GAA/MPA), multinational petroleum companies (inc. Shell/Viva, Caltex, BP and independents), private companies (inc. Lend Lease, John Deere, Jaguar, Schlumberger, etc.), and state transport authorities (inc. VicTrack, Yarra Trams, Metro and V-Line) at a variety of sites including private residential, commercial premises, manufacturing, chemical, mining, waste management, public utilities and current and former armed forces sites, including unexploded ordinance work.

Matthew has a specific technical focus on soil-vapour investigation and assessment, both passive and active.



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## ABSTRACT SPECIFICATIONS

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### **The business case for ISO14001 certification**

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#### *Abstract:*

ISO14001 is the most adopted environmental management system in the world. It is implemented by 3,300 organizations in Australia and more than 300,000 globally.

This study answers the questions:

1. Does ISO14001 improve environmental performance?
2. How can we influence its implementation?
3. What incentives are provided by Australian regulators for ISO14001?
4. Does ISO14001 impact environmental prosecution outcomes?

The study outcomes:

- ISO14001 has been statistically proven across several studies to reduce air, water and waste pollution and improve systems. It has not reduced non-compliance, complaints or incidents.
- The most influential reasons organizations adopted ISO14001 were economic and ethical.
- The incentives provided by regulators in Australia vary by state and include fee reduction and risk based license conditions.
- In environmental prosecution cases this study found that ISO14001 did not reduce the severity of penalties imposed. Although pending prosecution did result in several organizations choosing to implement ISO14001.

*Biography:*

Jessica is an environmental professional who has experience in multi-national mining and metals corporations both in Australia and the Gulf. She holds a Bachelor of Engineering from the University of New South Wales and a master's degree in Environmental Management from the University of Queensland. She is passionate about process improvement and environmental risk reduction. She has led pollution reduction initiatives, permit negotiations, environmental monitoring and strategic planning. Her last position was in the Sultanate of Oman where she led the environmental management team for a primary aluminium smelter, power plant and port.



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## ABSTRACT SPECIFICATIONS

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### **Growth and adaptation in environmental practice – a personal perspective**

Author: Fiona Gainsford

Organisation: Gainsford Environmental Consulting

Country: Australia

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*Abstract:*

Having worked in the field of environmental impact assessment field for more than twenty years, I have noticed that the market segments (eg wastewater, site contamination, transport etc) which I have engaged in have changed significantly over time. However, the role and format of environmental impact assessment has changed very little. In this presentation I will examine whether the change in market segments is a result of government policy, opportunity, community expectation, other external forces or a combination of those aspects.

I will review policy responses and triggers at State and commonwealth levels, and test these assumptions by interviewing and or surveying senior practitioners in the environmental impact assessment profession across Australia. The format will be a personal perspective.



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## ABSTRACT SPECIFICATIONS

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# **Progress towards a strategic approach for the identification and approval of redevelopment on potentially contaminated sites. *You just approved a sensitive landuse where?!?***

Author: Amy Gason

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Country: Australia

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### *Abstract:*

Transition of a site to a more sensitive use from a statutory planning perspective involves assessment to confirm the land is fit for the intended use. However, planning “triggers” are separate from the assessment of risk and financial value specific to transactions. Are we expecting too much of the current decision makers, in many cases council’s statutory planners, to be able to identify whether a site is appropriate for its intended use? A strategic approach is required to improve the outcome of these complex and multi-stakeholder transactions.

The Victorian Auditor General’s Office (VAGO) Audit Report (2011), “Managing Contaminated Sites” concluded that, “The Department of Planning and Community Development (DPCD), the Environment Protection Authority (EPA) and councils are not effectively managing contaminated sites, and consequently cannot demonstrate that they are reducing potentially significant risks to human health and the environment to acceptable levels.”

A major reform of the contaminated land management processes in Victoria may have been anticipated following the 2011 VAGO Audit Report and the Potentially Contaminated Land Advisory Committee Report, 9 March 2012. However, it appears that the opportunity for an integrated approach across approvals stakeholders has not been fully deployed and environmental assessment is not prioritised during strategic planning.

Transactional due diligence is often driven by the principle, caveat emptor, “let the buyer beware”. Recent examples and those cited in the 2011 VAGO Audit Report indicate that adequate environmental information is not necessarily accessible to decision makers and that current practices do not consistently identify environmental concerns or liability for unsophisticated buyers or developers. Are existing statutory and mechanisms such as published guidelines sufficient to identify environmental issues? Recent history would suggest the answer is “no”.

*Biography:*

Amy Gason (BSc (Hons) The University of Melbourne, Grad Dip (EnvEng) Deakin University) has seventeen years' experience in environmental management including consulting to public and private entities both in Australia and the United States. Amy has particular experience in environmental due diligence supporting complex property transactions and contributes specialist environmental and regulatory advice as part of merger and acquisition teams for the preparation of acquisition, divestment, or closure strategy. Amy leads environmental audits of multi-site private sector clients to review risk, compliance and strategic environmental programs.

Amy has developed and delivered transactional environmental due diligence programs for commercial lending teams, implemented environmental management systems for the United States Postal Service, and undertaken corporate environmental compliance and culture auditing for Fortune 100 and 500 companies. Amy is currently supporting projects spread across Government, mining, resource, energy, transportation, water, and infrastructure sectors. She has a passion for working collaboratively with her clients to improve environmental awareness at all levels of their organisations to improve decision making processes.





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## ABSTRACT SPECIFICATIONS

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# Solar drying of brine - better understanding leading to improved decision making

Author: Chris Gimber

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Country: Australia

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### *Abstract:*

The CSG industry is grappling with the problem of managing large volumes of brine waste. One potential management method which is gaining increasing attention is solar drying of brine followed by permanent storage of crystalline salt in a hazardous waste facility. While solar drying of brine is a simple and reliable method of drying in many parts of Australia, it is not without risk. Some of the more substantial risks include wet climatic sequences during the salt harvesting period and diminished evaporation caused by the ionic composition of the brine.

This paper outlines the key aspects that need to be considered when assessing the suitability of solar drying for a particular application. Some of these include:

- the brine chemistry and its effect on evaporation rates, particularly as it becomes highly concentrated
- the level of intervention/maintenance activity that is available at different stages of the drying process
- the degree of flexibility around the target end date for completion of drying/crystallization and the trade-off between evaporation area and certainty.

Many assessments of solar drying rely on empirical relationships between salinity and evaporation (called the "salt curve"). These relationships are derived for a specific water type in a specific location, and therefore are often not appropriate for waters of different chemistry in locations with different climatic conditions (e.g. relative humidity). This paper explains how to derive a relationship for the specific brine being considered, either through geochemical modelling or bench scale testing.

The design and operation of the drying ponds has a major influence on the rate at which crystallisation occurs and the moisture content of the salt. Improvements can be made through simple management practices and design features, which are described.

The considerations described in this paper should lead to a more complete understanding of solar drying and more reliable performance prediction, allowing for improved decision making.

*Biography:*

Chris Gimber is an Principal Environmental Engineer with KBR, providing specialist expertise in the areas of water management, geochemistry, catchment management and soils. He has more than 15 years consulting experience in the environmental sector, with experience in a number of geographies including Australia, Thailand, Indonesia, PNG, India, Brazil and New Zealand.



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## ABSTRACT SPECIFICATIONS

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# Control charts as an informative and robust environmental monitoring tool for decision making

Authors: Aaron D. Gove, Jessica E. Oates and Robert D. Archibald

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Country: Australia

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### *Abstract:*

Although monitoring is recognised as an integral part of environmental management, criteria for determining: a) whether an impact has occurred b) whether management intervention is required and c) whether the impact has been addressed, are often poorly developed. This is a current criticism of approaches such as “adaptive management” where changes to management are rarely implemented because decision rules are not clearly defined and/or agreed upon. Control charts are a transparent means of presenting monitoring data and illustrating distinct thresholds for impact detection and the need for intervention. The visual presentation of data in control charts allows monitoring data to be clearly communicated, and consensus on interpretation to be more easily reached. Control charts were originally developed to monitor manufacturing processes, but are increasingly employed in environmental monitoring. Statistical control charts generally rely on a period of baseline data in order to establish the natural variation of the system which is then used to determine a set of control limits. There are many statistical variations on this theme, and it is possible to monitor a range of different data types including multivariate data (e.g., community composition). We will present the basic structure of control charts, and then demonstrate their utility with examples from plant health and animal population monitoring programs. We will also describe some issues that need to be carefully considered when applying the approach.

*Biography:*

Aaron Gove has been a Senior Scientist with Astron since 2012, following work on range of environmental projects in government and academia. His main role at Astron is designing monitoring programs across a range of disciplines, including oil and gas, and mining. He ensures that field data is analysed most appropriately and that monitoring programs are designed to maximise information value and best inform management decisions. He is particularly interested in the successful integration of production systems and the environment and this interest has led him to work in other systems such as agriculture and agro-forestry. He has published more than 20 scientific papers, including an introduction to control charts for environmental monitoring.



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## ABSTRACT SPECIFICATIONS

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### **Exploring the effect of environmental assessment**

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#### *Abstract:*

Does the requirement to undertake environmental assessment (EA) have an effect on development and if so, what causes this effect? Arguably the most wide-reaching policy initiative ever, EA applies in jurisdictions across the globe as an appraisal tool for development. EA was intended to link a procedural mandate to consider the environmental consequences of development with more substantive policy outcomes, ultimately aimed at enhanced environmental protection and wellbeing. However, the desired policy outcomes

were vague and aspirational and while the procedural basis of EA has evolved strongly, a fundamental shift in the values and principles underlying decision-making about environment and development is not apparent. However, the requirement to undertake EA has been shown to have a range of effects. Procedural requirements promote rigour in assessment and transparency and accountability in public decision-making and are seen to promote and support governance. The core predictive activity of EA provides information on consequences to proponents and decision-makers. EA promotes design modifications and mitigation measures that reduce environmental impacts of development. Public participation stimulates debate and discourse regarding development. Decision-makers must respond to information generated through EA prior to making a statutory decision about development. Finally, organisations may transform knowledge gained through the procedural and information generating aspects of EA into ongoing action with resultant organisational transformation. While these effects have been observed, there is considerable inconsistency in outcomes and further research into the causal mechanisms by which EA has an effect is warranted. An inductive/constructivist approach is proposed to elicit the experiences and perceptions of purposively-selected informants representing regulator, consultant, proponent and activist perspectives. Semi-structured interviews will be undertaken in Australia and Indonesia, and analysed for insight into the effects that the requirement to undertake EA has on development and the causal mechanisms underlying these effects.

#### *Biography:*

Claire Gronow is an environmental practitioner with 25 years' experience in environmental assessment and management in Australia and overseas. Claire has undertaken environmental assessment of a wide range of projects and activities in sectors including resource, infrastructure, tourism and development. Claire is a Fellow of EIANZ and a Certified Environmental Practitioner (IA Specialist). She was awarded Certified Environmental Practitioner of the Year in 2013 and the Mary Lou Morris Award for Service to the Institute in 2014. Claire is currently enrolled in PhD at Griffith University in Queensland.



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## ABSTRACT SPECIFICATIONS

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# **Auckland Harbour Bridge: meeting environmental challenges sustainably**

Authors: David Greig and Kathryn McDonald

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Country: New Zealand

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### *Abstract:*

The Auckland Harbour Bridge (AHB), a steel structure which spans the iconic Waitemata Harbour, suffers marine corrosion and weathering problems. Maintenance of its external surface results in discharges to sensitive air, land and water environments which need specific permits (NZ Resource Management Act 1991).

Discharges are caused by surface preparation and the application of new coatings. Physical containment methods for controlling discharges were authorized by the Auckland Council, as the regulatory agency, in 2011. While the outcomes sought by this approach were not unreasonable the implementation method for achieving this outcome was prescriptive, inflexible and costly. The cost for containment was estimated at \$65M over 10 years.

The NZ Transport Agency and its network contractors the Auckland Harbour Bridge Alliance (Alliance) recently sought a new sustainable solution for maintenance of the AHB. The Alliance sought from Auckland Council new permits that provided greater flexibility in managing discharges while still committing to achieving the same or better environmental outcomes previously permitted. These new permits were gained in December 2014 and the approach reflects improved and changing steel recoating technology, processes, and environmental management to allow for adaption and innovation without excessive statutory burden. A significant reduction in the volumes of material released to the environment through maintenance activities now occurs without physical containment.

The paper discusses the environmental issues posed by AHB maintenance, the local regulatory environment, and investigations undertaken to identify ways to reduce contaminant discharges and manage activities in an integrated way. Overall the project has shown leadership both for the Alliance and the Auckland Council. Recently recognized by the New Zealand Planning Institute the project was awarded the 2015 Best Practice Award for Integrated Planning and Investigations. A reflection on how the Adaptive Management Approach taken by the Alliance can be used in Australasia will also be provided.

### *Biography:*

Kat is a forward thinking environmental and sustainability practitioner with qualifications and expertise in environmental science, environmental management and sustainability. Kat has over 10 years' experience working in the environmental management field. Kat has also recently started undertaking a Masters Degree in Life Cycle Assessment (LCA) and in 2013 graduated from the Adding Sustainable Value programme and the Sustainable Business Council Future Leaders Programme. Her role as Company Sustainability Leader at Opus has a strong strategic focus and involves; sustainability policy development, strategy and planning; training and sustainability reporting. Kat uses her passion for sustainability to leverage support for innovative sustainability management solutions that drive long term business value and honour the triple bottom line. Kat maintains a role as an Environmental and Sustainability Consultant at Opus working with a wide range of stakeholders and clients. Coming from an environmental management background, Kat is able to recognise environmental issues quickly and work towards appropriate and innovative solutions. Kat is focused on achieving win-win solutions for her clients in a way that adds value not only to their business but also to society as a whole. Kat has recently been shortlisted as a candidate for the 2015 Association of Consulting Engineers of New Zealand (ACENZ) Future Leader Award.

David has a background in environmental science with over 30 years' experience in the resource management field. David works in the NZ Transport Agency's Highway and Network Operations National Office Environment and Urban Design Team, providing advice on managing effects on natural systems to ensure projects can meet statutory needs and also good practice. Working with a range of engineering teams, statutory planners and stakeholders, David is able to influence the NZ Transport Agency towards meeting its environmental and statutory responsibilities, something he finds rewarding.





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## ABSTRACT SPECIFICATIONS

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# **SERA national standards for the practice of restoration in Australia**

Author: David J. Hancock

Organisation: Natural Area Holdings Pty Ltd

Country: Australia

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### *Abstract:*

Ecological restoration is increasingly needed in Australia to repair past and current degradation and raise awareness of the need to avoid future environmental damage.

The Australian continent carries a legacy of extensive environmental degradation in urban, industrial and production landscapes and seascapes that will not be overcome without active and ecologically appropriate intervention. Degradation from past activities and current developments will not be adequately mitigated without a strong restoration standards framework - and future degradation will not be avoided without society becoming more aware of the cost and benefits of protecting native plant and animal communities from damage in the first place.

The Draft SERA National Standards for the Practice of Ecological Restoration in Australia has been prepared collaboratively by the Board of the Society for Ecological Restoration Australasia and its not-for-profit Partner organisations. This presentation will, for the first time, share these standards with the professional environment community.

The Standards identify the need and purpose of ecological restoration and explains the relation to other forms of environmental repair practiced in a range of zones in the landscapes and seascapes of Australia. The Standards outline the principles underpinning restoration philosophies and methods, and identifies a framework for identifying appropriate ecological goals, objectives and measurable standards for projects - ranging from those that are least well-resourced to those that are resourced by commercial gains attached to industrial and residential developments. The Standards provide a blueprint of principles that will also aid regulatory frameworks governing development approvals, to encourage and measure ecologically appropriate restoration and rehabilitation.

*Biography:*

David is a Company Director qualified in accounting, finance and business law. He had a 22-year career in banking with the majority in commercial lending, corporate banking and retail administration to general management level throughout Australia.

In 2001 he founded Natural Area Management & Services in Perth, WA. This company has grown to be one of the largest suppliers of environmental contracting services in the state with over 70 full time staff currently.

His community environment work has been recognised with numerous awards and he is a former City of Joondalup Citizen of the Year and Department of Environment & Conservation (DEC, now Department of Parks & Wildlife) Volunteer of the Year.

David's particular interests are business development, risk management, the propagation of recalcitrant species and industry standards required for high quality rehabilitation. He has broad on ground experience in environmental restoration, weed control, erosion control and fire fuel load control.

He serves on the management committees for The Revegetation Industry Association of WA (RIAWA), The Society for Ecological Restoration Australasia (SERA) and The International Plant Propagators Society (IPPC).

As part of the additional community support provided by Natural Area, David is active in the operations of the Dieback Working Group (DWG), the Association of Mining & Exploration Companies (AMEC) and the Australian Network for Plant Conservation (ANPC).





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## ABSTRACT SPECIFICATIONS

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# Western Australian Department of Transport – Statewide Maintenance Dredging Program

Authors: Dr Bruce Hegge<sup>1</sup>, Joel Bailey<sup>2</sup>, Tim Green<sup>3</sup>, Sarah Marshman<sup>1</sup>, and  
Peter Wilkins<sup>4</sup>

Organisations: <sup>1</sup>BMT Oceanica Pty Ltd, Wembley, WA

<sup>2</sup>Formerly BMT JFA Consultants Pty Ltd, now Wavelength Consulting Pty Ltd

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### *Abstract:*

Over 30 coastal facilities and small craft waterways around the coast of Western Australia, from Esperance in the south-east to Wyndham in the far north, are managed by the Department of Transport. Navigable water depths at these sites, and of other regional channels, are managed via a program of maintenance dredging. This maintenance dredging program is central to the viability of the State's commercial fishing and marine tourism industry and the safe use of waterways by all users.

To ensure consistency of approach across the wide geographical spread and diversity of facilities, an Environment Management Framework has been developed. This Framework ensures appropriate consideration is given to the environmental, regulatory and social challenges associated with the maintenance dredging program. Through this coordinated approach the maintenance dredging works are managed as a continuous program, rather than individual campaigns. Further, the integration of environmental, technical and contract management into the program provides a firm foundation for identifying and implementing best practice methods.

This paper will give an overview of the statewide maintenance dredging program, the key challenges and issues that are typically encountered, and best practice approaches adopted to manage these challenges.



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## ABSTRACT SPECIFICATIONS

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### **Evolution in strategic assessments**

Authors: Peter Hemphill and Heather Tolley

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Country: Australia

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#### *Abstract:*

Strategic assessments under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) came into operation in 2007. Since that time 19 assessments have commenced and eight of those have reached their conclusion.

In many ways strategic assessments are hugely challenging and aspirational. They are often seeking to turn the equivalent of hundreds of individual assessments into one large project. They need to:

- achieve good environmental outcomes over substantial spatial and temporal scales;
- provide both certainty and flexibility; and
- enable a program to be implemented over 30+ years.

We look at how the process has evolved from the early days of the Melbourne and Sydney urban assessments, to the more recent assessments like the Great Barrier Reef and Perth-Peel projects.

We examine the lessons learnt. What has worked well and what have been the main challenges. We also look at what has changed over the eight years that strategic assessments have been running and where they go from here.

The presentation is based on:

- Interviews with key players involved in the process. This includes personnel from the Commonwealth and State Governments, as well as the private sector.
- Personal recollections from having:
  - worked on strategic assessments in the Commonwealth environment department;
  - managed three of the large urban assessments;
  - worked on three of the other assessments; and
  - prepared the Commonwealth's guide to strategic assessments.

*Biography:*

### **Open Lines Consulting**

Peter Hemphill and Heather Tolley are Directors of Open Lines Consulting ([www.openlines.com.au](http://www.openlines.com.au)). Our main areas of work are site based impact assessment, strategic assessments, policy work, and strategy and facilitation. We value work that is well thought out, well delivered and done with integrity.

#### **Peter Hemphill**

Peter started his career in 2001 as a graduate in the Commonwealth Environment Department. He worked in various areas of the Department including spending the majority of his time dealing with assessments and approvals under the EPBC Act.

Peter co-founded the Canberra office of Eco Logical Australia in 2007. He has been working as a consultant since that time specialising in strategic assessments, policy development and the EPBC Act.

He founded Open Lines Consulting in 2010.

#### **Heather Tolley**

Heather is a Director of Open Lines. She has been specialising in environmental impact assessment under the EPBC Act for over 9 years. She has successfully delivered a number of large and complex projects across a variety of sectors, including urban development, ports, mining and infrastructure.

Heather enjoys the strategic thinking involved in her work - the need to understand and deliver on project needs, priorities, resources and timeframes, while meeting legislative and policy requirements and achieving good environmental outcomes.

Before becoming a consultant, Heather worked for the Commonwealth Department of the Environment in the (then) Approvals and Wildlife Division.

#### **Notable projects**

Notable projects that Peter and Heather have worked on include lead roles on:

- Perth Peel urban strategic assessment (current).
- Western Sydney Growth Centres strategic assessment.
- Molonglo urban development strategic assessment.
- Commonwealth's EPBC Act guide to strategic assessments.
- Port of Abbot Point EPBC Act Cumulative Impact Assessment.



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## ABSTRACT SPECIFICATIONS

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### **Managing stakeholders interests: How to manage complex and competing expectations**

Author: J King

Organisation: Environmental Strategies

Country: Australia

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*Abstract:*

An important part of dealing with environmental issues, especially contaminated sites, is managing stakeholders and their various interests. When the site is owned and operated by one party the stakeholder exposure is limited and easier to manage. But when an entire portion of a small town is affected the number of stakeholders and their expectations become harder to manage.

When dealing with state government, who want to have a site remediated to background levels; local businesses that don't really understand the process and aren't sure if they should let you access their land; the client who wants the best outcome for the least expenditure and the consultant who wants to correctly apply the science and make an inform decision. Can you please all of these stakeholders and should you? What happens when interests of stakeholder fly in the face of good science?

Environmental Strategies (ES) has dealt with such issues in this case study. A small town with a large contamination problem forced ES to manage stakeholders dynamically to ensure that sites have been signed off and all stakeholders' expectations are met.



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## ABSTRACT SPECIFICATIONS

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# **Will vagrancy rates in the movement of migratory bird species increase with human induced environmental changes?**

Author: Dr Laurence Knight

Organisation: University of Tasmania

Country: Australia

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### *Abstract:*

Migratory bird species balance favourable environmental conditions at their breeding and wintering ranges with migration hazards. Human induced environmental changes are disrupting the movements of migratory species, with a number experiencing population declines. The survival of some species may depend on their capacity to adapt to the changing conditions. It is possible that changes in migratory patterns will result in species being increasingly seen outside their normal ranges. This study investigates confirmed sightings of vagrants by the Birds Australia Rarities Committee as a potential indicator of migratory changes.

### *Biography:*

Dr Laurence Knight PhD, BSc (hons) *Griffith University* is an Honorary Research Associate in Geography and Environmental Studies at the University of Tasmania. Laurence has an ongoing interest in sustainability and has worked in the field in both academia and environmental protection agencies. He has lectured in geography, urban and regional planning and technology studies, and looked into a range of topics, from urban transport to waste management, from the disconnect between consumption and environmental impacts to the activity patterns of Australian birdwatchers, from the management of Australia's rangelands to the fraying web of life in the 21<sup>st</sup> century.





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## ABSTRACT SPECIFICATIONS

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# Reporting on New Zealand's environment – a fresh approach

Author: Dr Catherine Knight

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Country: New Zealand

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### *Abstract:*

In 2014, the New Zealand government made a bold decision: to place an obligation on itself and all future governments to regularly report on the environment. While the government has produced state of the environment reports in the past (in 1997 and 2007), there was no legislated obligation to do so, nor any guidelines setting out the scope, process or methods for reporting. The lack of such obligations or guidelines has implications for the transparency and integrity of reporting, and also for the continuity and consistency of reporting (because the greatest value we derive from environmental reporting is the ability to track changes over time).

Under the new regime, reports will be co-produced by the Ministry for the Environment and Statistics New Zealand to ensure that the data presented is statistically robust, and therefore trusted by New Zealanders and international stakeholders. The regime also creates a clear separation between the reporting function and political decision-making, so that the reports produced can be trusted as free from political influence. Once enacted, the new environmental reporting legislation will require the government to report on the whole of the environment every 3 years, and each environmental 'domain' (the air, atmosphere and climate, land, fresh water, and marine environments) every six months.

New Zealand's new approach to environmental reporting is based on a pressure-state-impact framework, enabling us to make connections between each domain, and view the environment as an interconnected whole, which affects, and is affected by, human society. The legislation also requires that environmental reporting reflects Te Ao Maori, the Maori worldview. This is a notable information gap, but one that we are taking steps to fill, in partnership with information providers throughout New Zealand, including iwi and hapu (tribes and sub-tribes). Integrating a Te Ao Maori will bring more depth and balance to environmental reporting, and enhance all New Zealanders' understanding of the environment and our relationship with it.

*Biography:*

Catherine is fascinated by the interactions between people and the environment – what factors drive human behaviour, and how peoples' attitudes and knowledge about the environment evolves. After exploring the human nature relationship in Japan through her masters and doctoral research, she was motivated to understand New Zealand's own environmental history. In 2014, she published *Ravaged Beauty*, an environmental history of her birthplace, the Manawatu. Though focusing on one region, the book explores themes and patterns that are evident more broadly in New Zealand's environmental history.

Catherine has been working as a policy analyst at the Ministry for the Environment since 2008, and her knowledge of environmental history provides valuable context to her policy work. She is the convener of the website *enviro history NZ*, which was established in 2009.



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## ABSTRACT SPECIFICATIONS

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# The neutral or beneficial effect on water quality assessment tool

Authors: Alison Kniha and Greg Greene

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Country: Australia

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### *Abstract:*

All developments requiring consent in Sydney's drinking water catchment must have a neutral or beneficial effect (NorBE) on water quality. To help councils, as consent authorities, be satisfied that the carrying out of a development would have a NorBE on water quality, and consultants to prepare their own NorBE assessments to submit with a development application (DA), WaterNSW has developed the NorBE Assessment Tool. Using the Tool, it can be determined whether NorBE has been satisfied or not, or if the application needs to be sent to WaterNSW for assessment instead.

The NorBE Tool is a web-based software application that allows the user to assess the site conditions, and stormwater and wastewater impacts. It uses a GIS interface, and includes a model to assess the water quality impact of on-site wastewater systems for developments in areas not connected to the sewer. The NorBE Tool uses the NSW Government's SIX Maps Viewer to display the site and model any on-site systems.

Councils are able to assess themselves whether the NorBE requirement has been met for most proposals, including alterations and additions to existing dwellings, most new dwellings, and small urban and rural subdivisions. Consultants operating in the catchment are able to submit a NorBE assessment for the majority of developments as part of the DA. This increases the likelihood of a high quality assessment being lodged that specifically addresses the NorBE requirements.

The NorBE Tool is practical, simple, and provides flexibility to achieve the best outcomes for the protection of water quality. It reduces DA processing time, and costs to developers, the community, councils and WaterNSW, and provides a consistent and transparent process for development application assessment. It is considered to represent best practice of how a State government organisation can support the streamlining of the development assessment processes.

*Biography:*

Alison Kniha is the Senior Environmental Planner at WaterNSW. In this role, Alison supports the development and implementation of the NorBE Tool and supporting guidelines for councils and consultants throughout the Sydney drinking water catchment. Alison provides technical and assessment support, and undertakes the training of Tool users.

Alison also manages the development and review of best management practices and performance standards for application in the catchment to help achieve development outcomes that are consistent with the protection of water quality.

Greg Greene is the Manager, Environment and Heritage at WaterNSW. In this role, Greg leads the planning, development and implementation of key environmental, heritage, water quality and climate change adaptation initiatives for the organisation. Greg led the development and recent upgrade of the NorBE Tool, and oversees its implementation across multiple stakeholder groups.



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## ABSTRACT SPECIFICATIONS

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### **EIA – adding value for everyone**

Author: Jack Krohn

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Country: Australia

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#### *Abstract:*

EIA has been part of the legislative landscape since the 1970s, and to-day EIA procedures are administered in all Australian State and territories.

We are all doing it. How best, then, to make the most of it?

EIA is a process, operating in a statutory framework, intended to reduce the risk that proposals, with possible adverse impacts that could outweigh their benefits, will be approved in ignorance of those impacts. The project proponent pays for gathering the necessary information and sharing it with stakeholders.

EIA is often criticized because (allegedly, and along with other criticisms more specific to particular jurisdictions):

- It costs too much;
- It takes too long;
- It causes stress and division in communities;
- It is inherently biased when the proponent prepares the impact statement;
- It leads to foregone conclusions, especially for government projects;
- Proponents are inequitably resourced compared to community objectors.

How can we overcome these concerns and optimise the benefits of participating in the EIA process for all parties – proponents, decision-makers, authorities, consultants and the community?

The session will use a modified “World Café” format, with a number of tables, each hosted by a facilitator who will encourage discussion and record key comments on the topic allocated to that table. Other participants will move from table to table to join whichever discussions are of greatest interest to them. The session will conclude with a “voting” exercise where table facilitators will announce the most significant outcomes of their respective conversations, and participants will endorse (or oppose) and rank those outcomes as conclusions. This will create a collective communique from participants on principles for optimising the use and benefits of EIA.

The session will be convened collaboratively in partnership with other IA professionals from other Australian jurisdictions.

*Biography:*

Jack Krohn has worked in the environmental planning and environmental impact areas within the Victorian Government for almost 30 years. He has managed or contributed to assessment processes for major road, coastal infrastructure, gas, wind energy, mining, quarrying and other development proposals. His role has included liaising with proponents, consultants, decision-makers and community stakeholders, and providing advice to Ministers and senior Department executive management.

Jack has been a member of EIANZ for 25 years, and has participated in annual conferences and Victorian seminars. He is also a long-time member of the International Association for Impact Assessment (IAIA), and has convened or co-convened interactive sessions at IAIA Annual Conferences in Geneva (2010), Porto (2012) and Calgary (2013). He has presented at various seminars and workshops, and has given guest lectures at several universities. In 2015 he joined the Environmental Science Advisory Board at Deakin University.

Jack's experience in impact assessment has underlined the importance of effective engagement between stakeholders and strong scientific rigour in scoping and conducting environmental investigations. He would like to challenge the status quo perception that environmental impact assessment is a barrier to be overcome rather than a process that can deliver benefit to all participants.



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## ABSTRACT SPECIFICATIONS

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# Getting the physical science right in marine environmental assessment: the need to challenge the status quo

Author: Piers Larcombe

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Author: Angus Morrison-Saunders (corresponding author)

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Country: Australia

Email: [a.morrison-saunders@murdoche.edu.au](mailto:a.morrison-saunders@murdoche.edu.au)

### *Abstract:*

The importance of managing Australia's marine environments effectively has been exemplified in the past decade or so by the occurrence of increased offshore oil and gas extraction along with construction and dredging for harbour works and increased shipping activity associated with recent mining boom times.

These activities directly impact the physical environment, especially in relation to dredging activity. Understanding and addressing the physical sciences in the environmental impact assessment (EIA) decision-making processes is fundamental to effective marine environmental management. We argue that application of the physical sciences in EIA in current Australian practice is deficient. We consider some potential consequences of changes to the marine physical environment associated with recent and ongoing coastal and offshore development projects in Australia and examine how EIA practitioners can address them more effectively.

We focus in particular on two matters: water turbidity, in terms of how it is currently measured and assessed, and physical interference by developments of long-term bed sediment transport pathways. Both water quality and seabed sediments are key controls upon benthic habitats. We examine both issues in relation to current understanding of environmental impacts, and how they are currently treated in EIA decision-making processes and subsequent management. We suggest that treatment and management of physical processes in the marine environment falls far short of equivalent activities in a terrestrial setting. We call on all stakeholders involved in EIA to challenge the status quo and ensure that the physical sciences are given the attention necessary to understand and manage fundamental environmental issues.

*Biography:*

Piers Larcombe is a senior marine scientist having extensive experience with EIA and ongoing environmental management of major coastal and offshore development projects in the UK and Australia.

Angus Morrison-Saunders is an associate professor in environmental assessment at Murdoch University, specializing in seeking to understand and enhance EIA practices.





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## ABSTRACT SPECIFICATIONS

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# **Inclusion of invertebrates in rehabilitation performance measures and minesite completion criteria**

Author: Prof Jonathan Majer

Organisation: Curtin University and Biomonitoring International

Country: Australia

Email: [J.Majer@curtin.edu.au](mailto:J.Majer@curtin.edu.au)

### *Abstract:*

The metrics used in most rehabilitation performance standards (PS) and completion criteria (CC) tend to focus on safety, aesthetic and biological aspects. However, the latter tend to be very generic and only provide a basic understanding of the 'naturalness', biodiversity value and ecological sustainability of the site. Terrestrial invertebrates are extremely diverse, and participate in all ecosystem functions and processes, including soil structuring, nutrient cycling and pollination, as well as providing food for vertebrates. Since the majority of species have specialized requirements, their presence or absence tells us much about the conditions of the environment that we are looking at. Assessment of the species present in an environment therefore provides an excellent picture of the diversity and environmental 'condition' or 'health' of an area. Inclusion of invertebrates in PS and CC would greatly enhance our understanding of the condition of the mine during rehabilitation or prior to closure. It would provide considerably more meaningful information on the 'naturalness', biodiversity value and ecological sustainability of the site than the current schedule of PS and CC.

This paper will discuss the selection of the most effective taxa to use, methods for measuring them and will outline ways in which inclusion of invertebrates can be achieved in a cost-effective manner, while still providing useable data.

*Biography:*

Jonathan Majer is adjunct Professor of Invertebrate Conservation at Curtin University. He developed a method for using invertebrates as indicators of the success of minesite rehabilitation, and has carried out evaluations at minesites throughout Western Australia, at Groote Eylandt (NT), Gove (NT), Weipa (QLD), North Stradbroke Island (QLD), South Africa, southeast Brazil and in the Amazon. His most recent involvement was with Chevron's Gorgon Gas project on Barrow Island, in which he assisted them to fulfil their ministerial obligations by ensuring that no alien invertebrates are introduced throughout the life of the project. This culminated in the publication of a book on invertebrates of Barrow Island. Since retiring from the university Prof Majer remains as an adjunct professor and has established a consulting company, Biomonitoring International, which specializes in terrestrial invertebrate-related issues.



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## ABSTRACT SPECIFICATIONS

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# **Application of site specific adsorption isotherms for deriving soil remediation goals protective of groundwater – Toowoomba Gasworks case study**

Authors: Barry Mann, Damien Morris and Adam Lupton

Organisation: GHD Pty Ltd

Country: Australia

Email: [Barry.Mann@ghd.com](mailto:Barry.Mann@ghd.com)

### *Abstract:*

Soil remediation goals for contaminated sites are typically based on exposure pathways related to human health (e.g. vapour intrusion, direct contact, ingestion etc.). However, in areas where potable quality aquifers are present, soil remediation to levels that are protective of the local groundwater resource, or groundwater-dependent ecosystems, may be required. This particular pathway is not defined by existing Australian guidance due to the uncertainties and complexities associated with this soil-to-water pathway.

One of the key sources of uncertainty is the chemical specific soil-to-water partitioning coefficient (KD), which are derived differently for organics and inorganics and values for which can range widely in the published literature. The level of conservatism necessary to address this uncertainty can often lead to remediation targets which are more stringent than they need to be; which consequently can result in excessive and/or impractical remediation timeframes and costs.

The Toowoomba Gasworks site overlies the Toowoomba Basalt, a potable aquifer, which is used for urban water supply. The site soils were contaminated with ammonia, benzene, petroleum hydrocarbons, and naphthalene. Soil cleanup targets protective of the underlying basalt aquifer were required as part of the remediation works. In order to minimise uncertainty and develop realistic remediation goals, GHD in conjunction with an Australian laboratory developed a soil column leaching method designed to rapidly produce high quality data for constructing adsorption isotherms. The isotherms were then used as a basis for deriving site specific KD values, which were then used to produce site specific remediation goals. The application of site specific adsorption isotherms significantly assisted in effective remediation of the site and protection of the local groundwater resource.

### *Biography:*

Barry Mann – Principal Hydrogeologist, National Remediation Co-ordinator

GHD Melbourne Office, Level 8, 180 Lonsdale Street, Melbourne VIC 3000

Barry has over 27 years in public service and private consultancy in hydrogeology, with a particular focus in the last 21 years on groundwater contamination, risk assessment and remediation. His experience includes technical scoping, supervision, contracting and management of projects related to groundwater resource, contamination assessment and health risk assessment, remediation pilot testing and system design, performance monitoring and CUTEP submissions. Barry's extensive practical experience covers a wide range of contaminated site and pollution settings, including; petroleum depots and refineries, manufactured gaswork plants and hazardous waste landfills. Some recent projects for which Barry has been technical remediation lead include:

- Groundwater interception scheme (using a series of horizontal drainage bores), designed to drain metals contaminated groundwater at a major zinc smelter site in Tasmania. System has been operational for since August 2009, and to date has recovered over 130 tonne zinc, 4 tonne cadmium, 7 tonne aluminium, 0.5 tonne of copper and 380 tonne sulphate which otherwise would have contaminated the Derwent River. The project won the National (Silver) Award (Environment) at the Consult Australia 2010 Awards, and was a finalist for Cleanup 2013 Award.
- Design and technical management of groundwater remediation of a benzene plume at Anglesea Barracks defence site, located in Hobart Tasmania. The project involved conceptual design, technical specification and construction of a dedicated in situ chemical oxidation (ISCO) system capable of applying high pH activated persulphate. Over 12 tonne of persulphate was injected into two separate source areas. Post ISCO monitoring indicated that benzene source concentrations had been reduced by around 75%, and that on-site remediation goals had been achieved in all but two wells.
- Co-author of the National Technical Guidance document for assessing monitored natural attenuation (MNA) of petroleum hydrocarbon contamination in groundwater, for the Co-operative Research Centre of Contamination Assessment and Remediation (CRC CARE).



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## ABSTRACT SPECIFICATIONS

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# **Conflicts of interest: the smell test identifying and managing conflicts of interest in the course of environmental practice**

Author: Tim Mellor

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Country: Australia

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### *Abstract:*

The EIANZ recognises that compliance with its Code of Ethics is central to sound environmental practice. The Code explicitly directs environmental practitioners to .....- "avoid and manage conflicts of interest, and make all relevant parties aware when there is such conflict"

Identifying a conflict of interest is clearly vital but it is not always obvious. It involves understanding the underlying principles and recognising not only actual conflicts of interest but also the appearance of a conflict of interest. This often seems counter-intuitive. It may feel like an assault on one's integrity.

This paper sets out the principles that underpin this important duty. It then provides practical guidance in identifying and dealing with such conflicts through real life examples and scenarios.

Consistent with the theme of the Conference, the paper will provide knowledge and skills in the ethical and professional implementation of good practise. It will also assist in maintaining the good professional reputation of environmental practitioners.

*Biography:*

Tim Mellor joined Mellor Olsson Lawyers in 1981 and has developed an extensive legal practice particularly in the areas of planning, development and environmental law, including as counsel in many such matters in the SA Environment Resources and Development Court and in appeals to the Supreme Court and the High Court. Tim also acts in native title claims in the Federal Court.

These areas of practice and his work in general commercial litigation, have involved Tim in dealing with government at all levels, and in court appearances in all State and Federal Courts.

Tim has been a member of the EIANZ since 2004. He has been a member of the Council of the Law Society of South Australia for the last 9 years and, during that time, has served as an Executive Member. He is also the Chairman of the Planning Environment and Local Government Committee and a member of the Aboriginal Issues Committee of the Law Society.

Tim has been actively involved in the National Environmental Law Association over many years, including periods as President of the South Australian branch and as National President.

His early experiences as an outdoor education instructor have led to a deep and abiding love of wilderness and all outdoor activities. Tim is the father of 5 children, which soaks up any other recreational time.



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## ABSTRACT SPECIFICATIONS

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### **Housing affordability: the other side of the coin**

Author: Helen Monks

Organisation: Highlight Consulting Pty Ltd

Country: Australia

Email: [info@highlightconsulting.com.au](mailto:info@highlightconsulting.com.au)

#### *Abstract:*

Housing affordability is usually defined in terms of people's ability to pay, or costs during purchase or the life of a mortgage. Elsewhere "affordability" has been widely discussed with some agreement as to definitions (eg housing cost in proportion to household income).

With NSW examples, this paper will take a more holistic view of the development process from raw wholesale land through subdivision to the point of first retail sale, charting the financial costs of environmental standards, statutory requirements and all other development costs before the product (eg a vacant suburban residential lot) is presented for purchase.

Components which contribute to development cost will be examined, as they necessarily build during the years prior to new lots coming onto the market. That is, within a triple bottom line view of development, and with "*status quo*" taken as best environmental practice, what components are there in the raw cost of a residential block? What did the developer pay to get there? To whom? How long ago? What risks were involved, and of what size? What could the developer control vs what was a non-negotiable demand? What are the unintended consequences of the current system?

Tough questions will be asked: who can afford (environmental) best practice? Does planetary sustainability predominate over social consequences? As environmental professionals, where does responsibility stop for the holistic (if indirect) consequences of our work? Can our society afford the current development process? Has best practice unwittingly dissolved the social safety net for housing, contributing to increasing inequity?

Answers should not be anticipated: this is simply a challenge to the 2015 *status quo*. The purposes are (i) to reveal costs incrementally built into current development processes over recent decades; and (ii) to connect environmental assessment requirements and costs of implementation of approvals, with current social and financial outcomes.

## Biography:

Dr. Helen Monks operates a consultancy with 30 years' experience in town planning, regional development, mediation and business management. A Certified Environmental Practitioner, Helen is a EIANZ current Board member, chairs its Communications Committee and was a member of the External Relations Committee in 2008/9. She appears annually in "Who's Who of Australian Women".

Helen is a long-term contributor to NSW Wildlife Atlas. During 2014, following a restructure, she was re-appointed to Central Coast Community Advisory Group, Greater Sydney Local Land Services representing bushcare.

From 1980-1986, Helen Monks started her private sector town planning and management career in Sydney, Hunter Valley and New England region with private and government clients. Projects included environmental plans, development studies and impact statements, feasibility studies, market surveys, government submissions, demographic research and occasional University lecturing.

Between 1985 and 1993 Helen was manager of government and non-profit regional economic development organisations in New England. Her innovative approaches to their management led to part-time external study for a Doctor of Philosophy (UNE), which was conferred in 1999, then awarded the biennial Postgraduate Thesis Award by ANZ Regional Science Association International.

In 1994 Helen moved into local government on the Central Coast, responsible for strategy, building, development engineering and town planning, with about 120 management, professional, trades, technical and administrative staff and an annual budget <\$11m.

With six tertiary qualifications, Helen is serving or has served on many committees and boards. She completed a 3 year term as a Director of Central Coast Business Enterprise Centre in late 2011, with another stint in 2013/14, retiring in mid 2014 after 15 years as the second-longest serving member of BEC mentor service.

**Winner:** Business Women Connect Central Coast Business Woman of the Year 2010  
**Instigator and co-ordinator:** BWC / University of Newcastle, Business and Law (Ourimbah) interactive program (2012-2016)





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## ABSTRACT SPECIFICATIONS

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### **Measuring cumulative socio-economic impacts of coal seam gas projects in the western downs: building the case for a strategic monitoring framework.**

Authors: Lara Mottee (Presenter), Kathy Witt, Jo-Anne Everingham, and Will Rifkin

Organisation: Kellogg, Brown and Root Pty Ltd  
University of Queensland, Sustainable Minerals Institute,  
Centre for Social Responsibility in Mining

Country: Australia

Email: [lara.mottee@kbr.com](mailto:lara.mottee@kbr.com)

#### Abstract:

The rapid growth of resource development in rural Queensland and a global interest in the 'social license to operate' has seen mining, oil and gas companies, and the state government place increased emphasis upon managing the needs of communities in the planning approval process. For the resource sector, the approval process can require that Environmental Impact Statements (EIS)s include a social impact assessment (SIA) and community consultation to characterize socio-economic impacts and benefits for affected areas. The SIA can also be required to specify an impact mitigation and management plan.

But how effective is the current SIA analysis and review process for a single project when a number of resource or construction projects are occurring in the same region? To what extent does a pre-project SIA match analysis of cumulative, post-project outcomes? To improve prediction, quantification, and management of cumulative impacts, what approaches can enhance the ability of practitioners, authorities, and project proponents?

To address this question, researchers at the University of Queensland's Centre for Social Responsibility in Mining (CSRMI) have been studying the cumulative socio-economic impacts of coal seam gas (CSG) projects in the Western Downs region of Queensland. The research team has selected a compact set of indicators, through a participatory process, to enable monitoring changes in affected communities.

The social and economic impacts detected via this set of indicators, and associated stakeholder interviews, are compared in this paper with the impacts forecast during the approval process. The analysis of trends in the indicators underline (1) the need for a focus on assessing cumulative impacts at the town level and (2) the importance of independent coordination across impact assessment studies in a region contributing to an overarching monitoring framework.

*Biography:*

Lara Mottee is a Senior Environmental Scientist with the engineering consultancy Kellogg, Brown & Root Pty Ltd. Lara has a special interest in Social Impact Assessment, and a degree in Science Communication, majoring in Social and Human Geography and Master of Environmental Management. In her career as an environmental consultant, she has been an author of a number of environmental and social impact assessments and has developed numerous management plans for large infrastructure projects across the east coast of Australia.

Most recently, she has been participating in research with the University of Queensland's Centre for Social Responsibility in Mining, under the guidance of Assoc Prof Will Rifkin, Dr Kathy Witt, and Dr Jo-Anne Everingham, as part of her postgraduate studies in Social Impact Assessment at Macquarie University. Through her research, she has contributed to the development of UQ's cumulative socio-economic impacts tool kit to help communities, industry and government monitor and manage social-economic impacts arising from resource projects, such as the \$60 billion in megaprojects in the Queensland CSG industry.



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## ABSTRACT SPECIFICATIONS

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# Supporting efficient policy implementation – moving forward on environmental regulatory reform

Author: Victoria Press

Organisation: Australian Government Department of the Environment

Country: Australia

Email: [Victoria.press@environment.gov.au](mailto:Victoria.press@environment.gov.au)

### *Abstract:*

The Department of the Environment has recently merged several key functions forming the Environment Standards Division. Among the many roles this Division plays, will be a continuation of focus on a core element of the Government's Plan for a Cleaner Environment: managing the regulatory reform process to deliver the One-Stop-Shop for environmental assessments and approvals.

In order to maintain ongoing business, pursue regulatory reform and adopt more strategic approaches to environmental assessment, we have and will continue to make complex policy decisions to fulfill the Division's role. By maintaining momentum of these reforms, there has been an ever increasing need to implement policies quickly, even rapidly, on occasion. The effort required with putting such policies into effect, however, can be underestimated and under-resourced if not carefully managed. We have identified policy implementation as a key support function to ensure fit for purpose policy is developed and delivered seamlessly. Rather than this function being delivered arbitrarily across many teams, as has been previous practice, a dedicated team has been established that will inform strategic policy development of implementation matters as well as operationalise strategic policy to ensure the policy intent is translated into regulatory practice.

This paper will provide an insight to our approach we have taken to implement these often complex and interlinking policies to support the One Stop Shop reforms. We will also discuss the progress made to reform the current environmental assessment process, through extensive consultation with the people that use it – our staff, proponents and consultants. By providing a detailed overview of current examples, such as the outcomes based conditions policy and the review of the Department's environmental assessment processes, we will demonstrate how we have approached policy implementation holistically, and how we have adapted principles of evidenced-based policy development and project management to achieve our objectives.

*Biography:*

Victoria Press is a Director in the newly formed Environment Standards Division, responsible for implementing the many policies of the environmental regulatory reform agenda as well as improving current business arrangements to ensure an efficient and effective environmental assessment and approval process. Victoria has also been involved in a range of environmental impact assessments in the Department of the Environment as well as other Commonwealth and State departments throughout her career.

Victoria was also involved in the Australian Government's *Water for the Future* initiative, implementing State Priority Projects and election commitments for irrigation infrastructure upgrades in several States. Victoria's background is in environmental science and urban and regional planning.



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## ABSTRACT SPECIFICATIONS

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### **Sponsored program development – where is the motivation for smes to engage?**

Authors: Redmond, J., Walker, B., Parker, C.M, and Simpson, M.

Organisation: Edith Cowan University, Perth WA

University of Western Australia

Deakin University, Victoria, Australia

Sheffield University, Sheffield, UK

Country: Australia

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#### *Abstract:*

Stakeholders have invested considerable resources into environmental programs to aid small and medium enterprises (SMEs) to improve their environmental performance. Globally these programs have not engaged SMEs sufficiently in order to improve their collective environmental performance. This outcome suggests that greater understanding is needed about what will motivate the majority of SMEs to engage in better environmental management. Academic research offers a number of insights into what SME owner-managers say will drive their engagement (e.g. education, financial incentives, and regulatory pressure). However, there are sticking points on each of these options and they contribute to the limited success that has been achieved thus far.

One of the identified drivers for SMEs is for stakeholders to demonstrate a convincing business case (i.e. a specific purpose to engage). It is acknowledged that a business case could give more SME owner-managers the required motivation to engage in environmental management. The main difficulty stakeholders' face, however, is quantifying the business case (e.g. measuring expenditure, return on investment and environmental outcomes). The key problem is that SME owner-managers are often reluctant to share the commercially sensitive data needed to develop such business cases. This lack of co-operation has resulted in there being limited useful information published that allows stakeholders to develop a business case, and SME owner-managers to determine the viability of investing in any changes to their environmental management. This paper discusses research that sought to establish a business case for Australian SMEs to reduce energy consumption. The research required SME owner-managers to share sensitive financial and other data with academics. The findings of the research suggest that much more could be achieved for SMEs and the environment if greater co-operation can be achieved between SMEs and other stakeholders, particularly in regard to sharing confidential, sensitive data.



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## ABSTRACT SPECIFICATIONS

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### **Waterways management: incorporating social and cultural values**

Authors: Helen Ross, Sylvie Shaw, Natalie Jones, Katherine Witt, Breanna Pinner, David Rissik and James Udy

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Country: Australia

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*Abstract:*

People's values towards the environment, and especially waterways, are seldom studied, and incorporating them in management is relatively rare. This project compares non-Indigenous and Aboriginal values towards the rivers of South East Queensland and Moreton Bay, using a framework of values identified by Stephen Kellert (1996, 2012). The study contributes to the monitoring and evaluation of Moreton Bay Marine Park, and proposed inclusion of social monitoring in Healthy Waterways monitoring for rivers and Moreton Bay. The analysis of values includes 60 semi-structured interviews with non-Indigenous people (30 from the upper catchments, and 30 from the lower catchments and Moreton Bay), and 12 individual interviews and two focus groups with Aboriginal Traditional Custodians. The study shows that South East Queenslanders are passionate about their waterways, and hold diverse values toward them. Interestingly, the values are widely shared: people hold several each, and a number of them are held by over half of those interviewed. There many commonalities, but also are subtle differences between Aboriginal and non-Aboriginal people, and non-Aboriginal people from the upper and lower catchments. Recognising this diverse set of values brings new insights for the social aspects of environmental management, which until now has focused on an apparent competition between resource use (utilitarian values) and conservation (involving moralistic and ecological values). The seven other values held by the public suggest new ways of enjoining public support for managing waterways, and new ways of managing the waterways to maintain people's very strong affiliation with them.

*Biography:*

Professor Helen Ross manages social sciences in the School of Agriculture and Food Sciences, the University of Queensland. She is an interdisciplinary social scientist (environmental psychologist and anthropologist) specialising in social aspects of sustainable rural development. In research she focuses particularly on people-environment relationships, sustainability and resilience, and collaboration processes for natural resource management and rural development. She also conducts research on social aspects of water management, and climate change adaptation. She Chairs Healthy Waterways Social Science Experts Panel, and is a member of the Australian Psychological Society's Climate Change Reference Group, and UNESCO's International Experts Group on Urban Futures. She is Co-editor of the *Australasian Journal of Environmental Management*, and a board member of *Architectural Science Reviews*, *International Perspectives on Psychology*, the *International Journal of Social Work and Human Services Practice*, and *One Health*.



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## ABSTRACT SPECIFICATIONS

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### **Protecting the outback- the need to think big in conservation**

Author: Dr. Barry Traill

Organisation: The Pew Charitable Trusts

Country: Australia

Email: [btraill@pewtrusts.org](mailto:btraill@pewtrusts.org)

*Abstract:*

The Outback is one of the few vast natural places remaining intact on Earth. It covers 73% of the Australian continent. It includes a wide range of ecosystems deserts, Mediterranean woodlands, tropical savannah, rainforest and wetlands. While the ecosystems vary there are similar set of threats, industries, tenures and geo-politics across the whole of the Outback. Consequently, conservation and development solutions in one region will tend to be of value throughout. The Outback is facing two main types of threats: extensive degrading threats and more localised but destructive threats due to intensive industrial and agricultural projects. The degrading threats are predominantly changed fire regimes and introduced invasive species. A key problem in many regions is now a lack of active human management to control wildfires, and introduced plants and animals. To ensure the best resilience to global warming, maintenance of ecological processes and connectivity across the Outback, major increases are required in protected areas, combined with sustainable off-reserve management. However, approaches to conservation of its vast landscapes have often relied on using piecemeal approaches for conservation developed for largely cleared and fragmented areas of more settled parts of Australia. New approaches are needed that are the reverse of the usual approach of place by place environmental assessments for industry, while leaving large areas empty of active management. Instead, a range of types of protected areas are needed over vast landscapes, within which more intensive industry nodes are permitted outside areas of high conservation value. This is already happening in parts, especially through the creation of huge new Indigenous Protected Areas. However, 'development' in the Outback needs to move beyond more 19<sup>th</sup> century models of simple extraction-based economies that do not build lasting social, economic or environmental development in remote Australia.



*Biography:*

Dr Barry Traill is a leading Australian environmental advocate. He has combined his expertise in wildlife ecology and advocacy over three decades to secure large areas of Australia's land and sea from environmental threats. A wildlife ecologist by training, he has worked primarily as a conservation advocate for the last 25 years. He is particularly interested in the interactions between people and the environment and the need to actively manage most Australian landscapes. He has led or co-led many major campaigns and initiatives in Australian conservation, including the establishment of the Australia's federal marine park network, the establishment of the Great Kimberley Marine Park and major controls on land clearing in Queensland. Barry is the Australian Director of The Pew Charitable Trusts and leads their work in protecting one of the world's few remaining great natural places – the Australian Outback and its adjacent seas.



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## ABSTRACT SPECIFICATIONS

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### **Rapid assessment for monitoring heritage sites of international significance**

Author: Angela Wardell-Johnson

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Author: J. Guy Castley

Organisation: Environmental Futures Research Institute, Griffith University

Country: Australia

Email: [g.castley@griffith.edu.au](mailto:g.castley@griffith.edu.au)

Author: Grant Wardell-Johnson

Organisation: Department of Environment and Agriculture, School of Science,  
Curtin University

Country: Australia

Email: [G.Wardell-Johnson@curtin.edu.au](mailto:G.Wardell-Johnson@curtin.edu.au)

#### *Abstract:*

K'gari-Fraser Island is recognised internationally as significant through World Heritage Listing. The unique characteristics that define this island landscape as iconic enable conservation of biophysical environments, emblematic fauna and cultural heritage. These World Heritage landscapes also provide unique opportunities for people to engage with nature. The values that define this iconic status and the dynamic ecosystems processes will be impacted both by climate change and changing social values with potentially far-reaching consequences.

This paper identifies the range of values defining iconic status that require monitoring to meet World Heritage objectives. Monitoring the impacts on these values through global environmental change and an increasing social interest in 'wild' areas by resident and visitor communities present special challenges. Future investment in managing these heritage values is constrained by political frameworks, resourcing and unpredictable change. Here we apply a preliminary test of a monitoring framework based on measurable variables that critically evaluates the state of heritage sites. The values included provide a cross section of ecological, environmental and social site assessment that are cross-referenced both with world heritage listing values for each site, as well as a means of reporting against previous records.

This monitoring approach is in the tradition of widely applied rapid appraisals conducted when resources are scarce and the need is great. It is possible for measurable and rigorous monitoring data to be collected efficiently and effectively. This monitoring framework provides longitudinal heritage appraisal using a combination of technological support and minimal ecological knowledge to ensure that Australia's global citizenship responsibilities can be effectively met. This monitoring will also ensure that world heritage listing will continue to inspire and conserve.

#### *Biography:*

Dr Angela Wardell-Johnson is an Environmental Sociologist with research experience in the socio-cultural values of biodiversity in a range of iconic landscapes in Australia, France, Asia, the US and Southern Africa. A formal training in environmental sociology and a background in community development and sustainable resource management provides a grounded understanding of issues that drive the implementation of solutions to environmental issues. Angela integrates research on resilience in socio-cultural contexts with land management in multifunctional landscapes to direct conservation planning and management. Angela serves on the IUCN Commission on Environmental, Economic and Social Policy (CEESP), the Queensland Government Biodiversity Partnership and the Fraser Island Dingo Working Group.

Dr Guy Castley is a Senior Lecturer affiliated with the Environmental Futures Research Institute at Griffith University, Australia. His research interests lie at the nexus between protected area management, conservation biology and sustainable tourism. Guy draws extensively from his applied park and wildlife management background, gained while working in southern African national parks, in addressing these research ideas. Recent research focuses on the conservation benefits accruing from various forms of tourism, such as nature-based tourism and responsible tourism, across local, regional, national and international scales. He also works on other topics with an applied conservation biology focus, including conservation and ecotourism, protected area planning and management, conservation on private land, recreation ecology and citizen science applications.

Associate Professor Grant Wardell-Johnson is a forest ecologist in the Department of Environment and Agriculture, Curtin University. Grant's biodiversity and climate change research program is integrated across several disciplines in ecology, biology, biodiversity conservation and environmental science to develop multi-species, multi-community conservation approaches with an emphasis on habitats most critical to biodiversity conservation (i.e. refugia). Grant has wide experience in biogeographical survey and impact assessment, particularly of disturbance, including logging and fire, and has published extensively on pattern and scale, and the interactive effects of disturbance. His current research major projects include: granite outcrops as refugia; forest refugia and old-growth forests; biodiversity patterns in landscapes; and biodiversity in high rainfall Mediterranean ecosystems. He is Australian representative of the International Society of Mediterranean Ecologists (ISOMED) and deputy chair on IUFRO Working Group on Old-Growth Forests and Reserves.



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## ABSTRACT SPECIFICATIONS

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# **Integrating rehabilitation, restoration and conservation for a sustainable jarrah forest future during climate disruption**

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### *Abstract:*

The northern jarrah forest of Mediterranean-climate, south-western Australia is characterised by deeply weathered soil profiles and low fertility, reflecting long geological and climatic stasis. The associated biota displays linked interactions with the fire-environment, novel methods of nutrient acquisition, and primary forests of low productivity but high biomass. We outline historical management and contemporary climate change interactions in this forest, and provide an approach for potential resolution to a climate-change/exploitation dilemma. Since European settlement (1826), this forest has been structurally transformed by deforestation and resource extraction, including logging and mining. Rainfall has declined by 15-20% since 1970, with projections for further decline. A new hydrological regime foreshadows regolith drying, with a disrupted climate leading to a higher incidence of unplanned fire regimes of greater intensity. Substantial areas of bauxite are mined and rehabilitated while the forest dilemma intensifies. However, areas mined for bauxite may offer an opportunity to integrate state-of-the-science rehabilitation, focused on the understorey, with restoration of the surrounds for a resilient future, despite inevitable change. This approach recognises loss of forest values through mining, but anticipates conservation of biodiversity and important elements of forest structure by minimising ecologically unacceptable disturbance to the surrounding forest, so benefiting a broad range of forest values. Thus novel and complex challenges due to interactions between exploitation and climate change require equally novel and complex solutions – increasingly required under transformative change.

*Biography:*

Associate Professor Grant Wardell-Johnson is a forest ecologist in the Department of Environment and Agriculture, Curtin University. Associate Professor Mike Calver is a wildlife biologist based in the School of Veterinary and Life Sciences at Murdoch University. Dr Neil Burrows is a fire ecologist and Senior Principal Research Scientist in the Science and Conservation Division of the Department of Parks and Wildlife. Giovanni Di Virgilio is a spatial scientist working in the School of Biological, Earth and Environmental Sciences at the University of New South Wales and Department of Environment and Agriculture, Curtin University.



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## ABSTRACT SPECIFICATIONS

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# **The community in environmental decision making: help or hindrance?**

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### *Abstract:*

Community or 'third party' involvement in environmental assessment, whether strategic or individual project assessment, has long been undertaken in most Australian jurisdictions using different methods and regulatory regimes.

It is often argued by some participants in assessment that community involvement whether through advisory committees, formal and informal consultation or the holding of public inquiries is a hindrance; offering only extended timeframes and increased costs, with little value added to the eventual outcomes for the proponent or broader community.

This paper, through the use of case studies and practical examples explores the issues in more depth and widens the debate to consider other elements such as trust in the regulatory process and governance/Government, the engendering of public participation as an element of civil society, as well as the more traditional consideration of whether third party involvement actually produces better outcomes for the environment and community.

The development through project assessment of the 'citizen expert submitter' will be discussed and the implications of this for proponents and regulatory authorities considered.

How the effectiveness of third party involvement might be improved will also be explored with commentary on the arguments for and against avoiding a 'voting' process where the number of submissions to a project or process risks becoming the deciding factor rather than the merits of the project based on informed argument and debate.

*Biography:*

Nick holds qualifications in environmental science and post graduate qualifications in public policy and law. He has over 25 years' experience in a variety of State and Local Government roles in Western Australia and Victoria including managing environmental impact assessment of major road projects with the West Australian Environment Protection Authority and advising the Victorian government in a senior role on coastal planning and development.

He has extensive experience in the private sector in Western Australia, Indonesia and Victoria with consulting firms after founding and running his own environmental consultancy from 2002-2006 specialising in integrated coastal zone management. Since 2006 he has been a full time Senior Panel Member with Planning Panels Victoria responsible for chairing environment effects inquiries, panels and advisory committees.

Nick was a sessional lecturer at postgraduate level in natural resource management at RMIT University in Melbourne from 2002-2006 and is an occasional lecturer at Monash University, RMIT University and Melbourne University in environmental law and planning. He is a Fellow of the Victorian Planning and Environmental Law Association, a member of the Environment Institute of Australia and New Zealand and on the Board of the National Environmental Law Association.