

Expert Report – Professor Max Finlayson

Prepared for T4 PAC Meeting

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The Ramsar Convention on Wetlands

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Introduction

1. This report has been prepared in response to a request from EDO NSW to assist the Planning Assessment Commission in preparing its report into the proposed development of a fourth terminal at Kooragang Island (T4 project).
2. I acknowledge the Expert Witness Code of Conduct under the Uniform Civil Procedure Rules 2005 and I agree to be bound by it.

Expertise

3. I have been an advisor to the Ramsar Convention on Wetlands since 1990. I have attended 7 of the triennial conference of parties as an official delegate (3 times for formal non-governmental partners of the Convention, twice as an Australian government delegate, and twice as an invited expert).
4. I was from 1993 until 2005 an Australian government nominee to the Convention's Scientific and Technical Review Panel, and since then an invited expert to the Panel. My input to the Panel has included establishing and assessing procedures for informing the Convention of change in the ecological character of wetlands. My wetland research and management activities have largely been directed towards assessing change and addressing the drivers of change. I have also participated in a number of international assessments, most notably those on climate change and biodiversity and ecosystem services.
5. I am currently employed as a Professor for Ecology and Biodiversity at Charles Sturt University in Albury, and concurrently as the Ramsar Chair for Wise Use of Wetlands at the UNESCO-IHE in Delft, The Netherlands. I have received awards

from various societies, including the Australian Society for Limnology and the Society for Wetland Scientists, and also from the Ramsar Convention and the international NGO Wetlands International, for my research and wetland management activities.

6. My CV is attached as Appendix 1.

Ramsar Convention

7. The Ramsar Convention on Wetlands is an intergovernmental agreement that came into force in 1975 and now has 168 member countries or parties. The parties to the Convention generally meet every third year to discuss the status of the world's wetlands and the administration of the Convention. Formal decisions are taken by consensus. A standing committee oversees the operations of a small secretariat and administers the Convention in between meetings.
8. Each country establishes an Administrative Authority to handle administrative and technical interactions with the secretariat. In 1993 the Convention established a Scientific and Technical Review Panel to provide independent advice and develop guidance for the wise use of wetlands. It provides advice to the parties through an oversight committee appointed by the Standing Committee.
9. The Convention is enacted in Australia through collaborative arrangements between the Commonwealth and State/Territory Governments with most of the 65 sites nominated as internationally important (Ramsar sites) being administered by state governments under relevant environment/conservation legislation and management plans.
10. The Commonwealth Environment Protection Biodiversity and Conservation Act provides a legal framework for addressing environmental issues of national significance, such as adverse change in the ecological character of Ramsar listed wetlands.
11. As a member of the Convention, Australia has three major obligations, all of which are relevant to this case:
 - a. to designate and conserve Ramsar sites (Articles 2 & 3),
 - b. make wise use of all wetlands (Article 3), and
 - c. support international cooperation for wetlands conservation (Article 5).
12. The requirement under Article 3.1 to promote the conservation of Ramsar sites has been equated by the Convention to mean the maintenance of their ecological character that is defined as "the combination of the ecosystem

components processes and benefits/services that characterise the wetland at a given point in time.” The importance of this definition is often overlooked – it has equal emphasis on the biodiversity, the ecological processes, and the ecosystem services.

13. Ecosystem services are the benefits that people derive from biodiversity and include provisioning (such as the supply of food and freshwater), regulating (such as the amelioration of storms or floods, or erosion, and fertilisation of floodplains), supporting (such as soil formation, and maintaining food webs) and cultural (such as aesthetic, social or spiritual outcomes) services, and are often under-assessed.
14. Since 2005 the Convention has placed the maintenance of these benefits on an equal footing with maintaining the biodiversity (the physical habitats, the species and sub-species, and gene pool) and the ecological processes (such as the energy and nutrient pathways) , as outlined in Resolution IX.1 Annex a.
15. In listing a Ramsar site the party is required to submit a Ramsar Information Sheet that describes the biophysical attributes and management arrangements for the site, and to update this at 6 year intervals or less.
16. The preparation of an ecological character description and a management plan are also recommended. To this effect the Australian governments have agreed a proforma for an ecological character description that extends the information and assesses the likelihood of adverse impacts affecting the site. These processes facilitate maintenance of the ecological character and establishing a baseline against which change can be measured – establishing this baseline is an important part of the listing process, and should be applied equally to the biodiversity, ecological processes and ecosystem services.
17. Under Article 3.2 of the Convention a party is to notify the Convention if the ecological character of a site has changed, is changing or is likely to change as a result of technological developments, pollution or other human interference. If a site is adversely impacted the ecological character should be restored.
18. I note also that a party should report if a site is likely to change, and to take management action to prevent the change. The Convention has further recommended that early warning indicators and risk assessment measures are in place in order to avert adverse change. This is an important consideration for this case – it is unclear what early warning, if any, will be implemented in order to avert adverse changes such as those that may occur with the biota that may be affected.
19. These requirements have been further developed and extended, for example, through Resolution X.1 The Ramsar Strategic Plan 2009-2015 where goal 2 applies to internationally important wetlands that have been identified but not

formally designated as Ramsar sites. This ensures that the ecological character of such sites should be protected even though they have not been formally designated as Ramsar sites. All parties to the Convention have committed to implementing the strategic plan.

20. This raises a major question mark over the proposal to degrade the breeding habitat of the Green and Golden Bell Frog on the T4 site and the implications that has for the use of the Ramsar site by Green and Golden Bell Frog.

T4 Project Impacts

21. The Project's potential to impact on the frog and shorebird habitats within the estuary is immense, by the removal of habitat and indirectly by constructing the dredge return water channel.
22. The frog and shorebirds use not only the Ramsar site but also the T4 development site. The T4 development site is an important breeding habitat for the frog which is also found within the Ramsar site.
23. Loss and change in the habitats and population of the species that utilise the T4 development and Ramsar site will constitute an adverse change in the ecological character of the Ramsar site.
24. Species that move between habitats, such as the Green and Golden Bell Frog and Eastern Curlew form part of the ecological character of the Ramsar site.
25. Hence, adverse change in, or loss of, habitat currently used by such species, and which adversely affects the populations of these species, would constitute a contravention of the obligation to maintain the ecological character of the Ramsar site.
26. The adverse impacts on shorebird populations caused by the Project would represent a contravention of the obligation to support international cooperation for the wise use of wetlands. The ecological character of any Ramsar site along the flyway is defined in part by the birds that use it. These birds move between Ramsar sites along the flyway. Any reduction in population of these birds at the Hunter Estuary Wetland site will reduce the population of the same birds on all Ramsar sites along the flyway, thus affecting adversely the ecological character of these sites. The Convention was established with a specific intention to consider wetlands as a global network of important wetlands, as well as considering sites individually.
27. The realisation that multiple sites were required to maintain the populations of many species reflected a maturing of the global conservation efforts. This maturation was extended in 2005 when ecosystem services were included in the

definition of ecological character – these services include the support the wetland provides for the species diversity present at that site, and for migratory species.

28. Further, and importantly, Australia's legal obligation under the Convention is to maintain and restore the Ramsar site, not to seek offsets in response to adverse changes in its ecological character. If a proposal would adversely change the ecological character it should not be approved.
29. It is not legally possible under the Convention to provide offset sites in compensation for harm to the ecological character of a Ramsar site. There is one exception to this principle. A party to the Convention could determine to 'delist' a site if it sees this as being within its' "urgent national interest".
30. In such a case instance it would be required to compensate and list an equivalent area as internationally important. It would also be required to seek approval for such changes under Resolution IX.6 which outlines procedures for changes to site listings in response to urgent national interest. The steps in this procedure include the changes being approved by the conference of parties to the Convention. To date no Ramsar listed wetland has been delisted, and very few have undergone changes in boundaries, with no known cases having occurred since Resolution IX.6 was adopted.
31. No proposal has been put forward by the proponent to delist the Hunter Estuary on the grounds of urgent national interest.
32. The benefits that people derive from the wetland (the ecosystem services) need to be assessed. This is because the ecosystem services form part of the ecological character of the Ramsar site. The assessment needs to be undertaken as part of the project determination.
33. Specific data on the biodiversity and ecosystem services situation within the estuary is required to ascertain how these interact with the Ramsar site, which is in line with the Convention's recommendation to adopt holistic and integrated approaches to wetland management, and supports the obligation to make wise use of all wetlands, which as defined since 2005, requires the maintenance of the ecological character of all wetlands, not just those listed as internationally important.
34. While the creation of new wetlands is encouraged by the Convention to compensate for the historical loss and degradation of wetlands which may, where data is available, reach 80% rather than the often stated 50%, the emphasis is on maintaining or restoring the ecological character of remaining wetlands.

35. The proposed development, based on the evidence of the loss of Green and Golden Bell Frog breeding habitat, indicates a likely change in the ecological character of the Ramsar wetland, the proposal should not be approved.
36. While the above text focuses on the impacts on the Ramsar site a further scenario is raised by the adoption of the Convention of Resolution X.1 in 2008. Specifically, if there are sites that have been assessed as meeting the requirements for listing as Ramsar sites they should be protected as if they were listed. The resolution does not state what processes should be used to make the assessment in these cases – just that they need to be assessed. The fact that the site of the proposed development warrants a compensatory measure indicates the value of site and potentially, its eligibility for Ramsar listing in its own right (particularly given its importance in providing Green and Golden Bell Frog breeding habitat, an important component of the ecological character of the site). Hence, decision makers need to consider not just potential impacts on the existing Ramsar site, but also includes the site proposed for development as they affect the Ramsar site.

Appendix 1: CURRICULUM VITAE - Colin Maxwell (Max) Finlayson

Con-current employment:

1. Professor for Ecology & Biodiversity, Director of Institute for Land, Water & Society, Charles Sturt University, Albury, NSW, Australia (2008 and ongoing) (0458271580; mfinlayson@csu.edu.au)
2. Ramsar Chair for the Wise use of Wetlands, UNESCO-IHE, Delft, The Netherlands (2014-18)

Associated positions:

Visiting Professor, Institute for Wetland Research, China Academy of Forestry, Beijing, China

Editor-in-Chief, Marine and Freshwater Research, CSIRO Publishing

Academic qualifications:

- Doctor of Philosophy, Botany Department, James Cook University, Australia (1981)
- Bachelor of Science Honours, University of Western Australia, Australia (1976)
- Certificate in University Leadership and Management, Charles Sturt University, Australia (2009)

Nationality: Australian

Previous recent employment:

- Principal Researcher, Wetland Ecology; International Water Management Institute, Colombo, Sri Lanka (2005-07) – program leader, early career researcher mentoring, international representation (including leading delegation to Ramsar Conference of Parties), global assessments (see below), project management.
- Director; Environmental Research Institute, Department of Environment & Heritage, Darwin, Australia (2002-05) – program and resource management, scientific leadership, international representation (member of Australian delegation to Ramsar Conference of Parties 1996 & 1999), global assessments, project implementation and funding, NGO representation.
- Research Manager & Wetland Conservation Program Leader; Environmental Research Institute, Federal Department of Environment & Heritage, Jabiru (Kakadu National Park), Australia (1993-2002) - program and resource management, scientific leadership, indigenous research projects, international representation, project implementation and funding
- Assistant Director, Wetlands; International Waterbird and Wetland Research Bureau, Slimbridge, UK (1989-2002) - program development, scientific leadership, international representation, global assessments, project implementation and funding

- President, Wetlands International global governing council (2001-08) including re-establishment of a new organisational structure, procedures and financial management. Australia was a formal member of the council at the time. This represented a supernumerary role and not formal employment.

Current external research grants:

- Co-Chief Investigator (Southern Cross University) - ARC Linkage – Water, carbon and economics: resolving complex linkages for river health.
- Chief Investigator - Adaptation pathways for aquatic plants under climate change: facilitating dispersal and management interventions. Australian Centre for Ecological Assessment and Synthesis.
- Chief Investigator – Ecological restoration opportunities for a large ephemeral lake used for irrigation storage. State Water and Lachlan Catchment Management Authority. AUD90,000
- Chief Investigator – Integrated water management in the Lachlan catchment in the Anthropocene. Lachlan Catchment Management Authority and Charles Sturt University.
- Co-Chief Investigator – Assessment of ecological change in the Lachlan Catchment using frogs as indicators. Lachlan Catchment Management Authority and Charles Sturt University.

Formal awards:

- Counsellor of Honour – Wetlands International – November 2007
- Society for Wetland Scientists – International Fellow Award – June 2005
- Australian Society for Limnology – Gold Medal – 2003
- Ramsar Wetlands Convention - Recognition of Excellence – June 2002
- National Australia Day - Achievement Medallion – Jan 2000

Involvement in international assessments:

- IPCC Third Assessment Report - Working Group II – Australasia; Ecosystem Services (1995-2000)
- Millennium Ecosystem Assessment - Status and Condition Inland Waters; Water & Wetland Synthesis (2000-05)
- Comprehensive Assessment of Water Management in Agriculture – Conceptual Framework; Ecosystems (2005-07)
- Global Environment Outlook 4 (UNEP) – Water; Interlinkages (2005-07)
- Global Environment Outlook 5 (UNEP) – Biodiversity (2010-12)
- Global Review of Wetland Resources and Inventory (Ramsar Convention) – coordinator and lead author (1997-99)

Input has been provided to the World Water Development Reports conducted by UNESCO and UN Water, with commentary on specific topics and reviewing draft entries.

Other projects associated with the Ramsar Convention have included: i) participation in an international project to develop guidance on the involvement of local communities and indigenous people in wetland management; ii) an analysis of the links between human health and wetlands; and iii) an assessment of the links between agriculture and human well-being in wetlands.

The above assessments all contained analyses of the inter-relationships between nature and ecosystem services and the value of the latter. The experience obtained through the Millennium Ecosystem Assessment led to proposals to the Convention to incorporate ecosystem services within the concept of ecological character of wetlands, and not have them seen as an external outcome, as had been the case. Engagement in the assessments also included mentoring and assisting lesser experienced colleagues develop the skills necessary to contribute further.

Involvement in these assessments was based largely on experience on ground with the topics being addressed, including measuring and valuing ecosystem services, and working with local communities and indigenous people for capacity development and self-management of their resources and management programs. These experiences were later used to provide advice on policy development and implementation.

Current research interests/projects:

- Interactions between human well-being and ecosystem services under global environmental change, including intensification of agriculture, trade-offs and responses with the onset of the Anthropocenic era
- Vulnerability and adaptation of wetlands/rivers to climate change, including changing values and trade-offs between biodiversity, ecosystem services and users, considering uncertainty and complexity
- Integration of ecologic, agricultural and social requirements and trade-offs between ecosystem services and users of wetlands with an emphasis on developing policy guidance and institutional changes
- Environment and agriculture interactions and policy responses/outcomes, and collaboration between stakeholders and policy-makers, including irrigators and other land users
- Wetland restoration and construction, including the use of artificial wetlands for waste water treatment and the generation of multiple values (i.e. ecosystem services), and the decommissioning of irrigation infrastructure
- Landscape change involving wetlands/rivers and land use (agriculture and mining activities) and implications for wetland ecosystem services and benefits for local people
- Food security – interactions between food production and social and environmental outcomes associated with river systems and coastal zones

Achievements:

- Research leadership and management, including managing a uranium mining monitoring and assessment program in Kakadu National Park, Australia, and establishing the Institute for Land, Water and Society as an efficient and productive research unit at Charles Sturt University.
- Policy impact through national and international processes addressing water/wetland/river degradation and restoration, and carrying the baton for climate change and local community and indigenous peoples' engagement in research and management.
- Vulnerability assessment of wetlands to climate change and sea level rise – specific investigations in Australia and Asia using formal frameworks incorporating local communities and multiple sources of knowledge. This information is also being collated and assessed for relevance to parts of South America.
- Completion of formal guidelines and technical guidance for wetland inventory, assessment and monitoring, and management planning and restoration, economic valuation, invasive species, and involvement of local people in wetland management. This has revolved around the integration of multiple knowledge sources, including that from local communities, and seeing wetlands as a setting for human well-being through the provision of ecosystem services and multiple benefits.
- Development and implementation of an integrated framework for wetland inventory, assessment (including ecosystem services) and monitoring – developed over the past decade and in collaboration with partners, including the Ramsar Convention, Wetlands International and the Mediterranean Wetland Program.
- Monitoring of water pollution due to mining and agricultural development – supervision of an integrated chemical, biological and physical water monitoring program supported by extensive technique development.
- Capacity building and mentoring of early career researchers undertaking multi-disciplinary wetland research and management, through formal courses and informal instruction and guidance, largely in Australia, Africa and Asia, and more recently in South America.
- Institutional governance and management through roles in NGOs, including President of Wetlands International global governance council, leadership roles in scientific and conservation NGOs, and national and international institutional advisory panels.
- Technical support for Ramsar Wetlands Convention – informally from 1989 and formally as a member of the technical panel since its inception in 1993. Provision of advice to government on implementation of the Ramsar Convention and other water/wetland initiatives.
- Engagement with local communities and indigenous people in wetland monitoring and management – extending over 25 years with active provision of technical advice to local communities and industry groups. This has included opportunities to contribute to initiatives in Asia, Africa and more recently in South America.
- Assessment of ecological character and management options at wetlands/lakes in Australia, Asia, Africa & Europe – specific site assessments and research investigations at wetlands, covering water pollution and eutrophication,

management of invasive species, water allocations, impact and risk assessments, and informing conservation strategies.

- Ecological investigations, risk assessment and management of invasive alien species – specific analyses of the problems of invasive weeds and risk assessments of several species.
- Development of regional strategies for wetland conservation and management – supported the development of the MedWet program, and strategies in the Volga delta, and smaller sites, and most recently programs in Brazil and Mexico.
- Linking ecological, hydrological and agricultural analyses at site and landscape scale – initiated many site analyses and most a trans-northern Australian multiple-scale and integrated wetland/river inventory and risk assessment.

Formal roles:

- Ramsar Wetlands Convention Scientific & Technical Review Panel – 1993-2015: Chair - 2002-05
- Wetlands International advisory councils – 1993-2007: President of Global Board of Directors – 2002-07
- Society for Wetland Scientists – Australia: Vice-President – 2003-04 & 10-11, President 2011-12
- Australian Society for Limnology committee 1982-4, 1995-2000: President – 1998
- WWF Australia: Scientific Advisory Committee – 2004-08
- Tour du Valat: Scientific Council, France – 2007-10
- Brazil National Wetland Program: Scientific Committee – 2010-14
- Mexico National Wetland Inventory Program: Scientific Committee – 2008-10
- Birds Australia Council – 2009-2011
- Scientific and Technical Advisory Group, Winton Wetlands Restoration Program, Australia: Chair 2011-14

Fields of competence & special interests:

- Policy and technical guidance and implementation of water/wetland ecosystem services and climate change analyses
- Local community involvement in environmental management and maintenance of human wellbeing and livelihoods
- Measurement and valuation of ecosystem services and trade-offs associated with water and riverine systems
- Global wetland observation and change, including water quality and pollution, and the impacts on biodiversity and humans (wellbeing and livelihoods)
- Climate change vulnerability, adaptation and mitigation in wetlands, including impacts on services provided by water and carbon flows

- Wetland management planning & environmental strategies - regional and local
- Wetland inventory, assessment and monitoring techniques covering biodiversity and ecosystem services
- Training in wetland management and research
- Assessment of coastal change and management responses, including climate change and sea level rise, given changes in the provision and distribution of ecosystem services
- Assessment of water pollution, particularly nutrients and trace metals and changes in ecological state
- Risk assessment and management of wetland weeds and pollution

Publications – summary:

Publications and outputs are listed under 10 categories, as summarised immediately below. This includes papers and reports in the scientific literature, articles in newsletters etc, and formal decisions taken at international conventions.

Papers etc in press are included; papers in preparation are not included. Unpublished reports (e.g. internal agency or consultancy reports), abstracts, workshop reports, speeches etc are not listed; scientific seminars and other presentations are not listed.

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Contact details:

