

## Riversymposium 2015 Fellows session

**The** 18th International Riversymposium in Brisbane this year, 21–23 September, is about 'Healthy rivers – healthy economies'. The Peter Cullen Trust Fellows are running one of the advertised special sessions: '**Promoting leadership – Multiple paths leading in one direction**'.

This session title reflects the Peter Cullen Trust's mission and philosophy; namely, that respectful, informed and meaningful collaboration is the key to responsible and sustainable water management, now and in the future. The 72 Fellows of the Peter Cullen Trust work together as the Peter Cullen Trust National Fellows Network (PCTNFN) to promote inclusive leadership and informed mutual support and debate.

In the Riversymposium session, three Fellows from the PCTNFN will discuss their current projects and case studies, as well as the role the Trust's Science-to-Policy Leadership Program has played in their approach to work. The Fellows will demonstrate that with the right support and opportunities, already talented people can achieve great success by building upon the strengths of professional relationships.

We hope to see you at Riversymposium, near the Brisbane River (photo below). Early bird registration: by 30 June. (Abstract submission: by 25 May.) [www.riversymposium.com](http://www.riversymposium.com)



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## The future of the National Water Initiative? Science in policy? Leadership learnings.

### Three reports by the 2014 Fellows

**During** the Science-to-Policy Leadership Program, the participants work together to research and deliberate on one or more particular issues, bringing together their various viewpoints and backgrounds in a true 'bridging' collaboration.

The 2014 participants, now the 2014 Peter Cullen Trust Fellows, have produced three reports (summarised on page 2) on the issues they worked on during last year's program. The reports will be published on the Peter Cullen Trust website.

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## 2015 Fellows graduation

**The** annual graduation of the new Peter Cullen Trust Fellows will be on **Thursday 26 November in Canberra**, 5.00 pm – 9.30 pm. We hope you will save the date, and reserve your ticket at the booking link on the Trust's home page, <http://petercullentrust.com.au/>.

Applications for the 2015 Science-to-Policy Leadership Program closed on 6 May, except for sponsored applications. Successful applicants will be announced in the Spring issue of *BRIDGING*, and on the Trust website.



Guests, Friends and Fellows, including some graduating Fellows, mingle before the Fellows' presentation and subsequent graduation dinner in November 2014. Photo: Ian Champ Photography.

**BRIDGING:** If you would like to be sent *BRIDGING* each quarter, please contact the Peter Cullen Trust office: [office@petercullentrust.com.au](mailto:office@petercullentrust.com.au), phone 02 6206 8606.

## **‘A future for the National Water Initiative? A case study approach’**

Reporting on their assessment of the National Water Initiative (NWI), the Fellows present a compact and researched discussion of gaps, risks and development opportunities in potentially applying a reformed NWI to each of these six planning challenges:

- mining development
- developing northern Australia
- urban water management
- coal seam gas
- indigenous access for economic development
- irrigation.

The group adopted a case-study approach in examining these emerging, or current challenges in the water sector. For each issue they present the ‘case for and against the further development of the NWI in relation to [the issue]’, and review how the NWI has performed on it. Their report card assessment of the NWI in relation to each case study comes up with ‘Well aligned’ for only two of the six issues. They find: ‘A recurring theme [is] challenges around consistent application of the provisions of the NWI’.



Discussions during the Leadership Program partly contributed to the reports now published by the 2014 Fellows. Left–right: Adam Bester, Lisa Ehrenfried, Christobel Ferguson, Ross Thompson, Sondoss Elsayah.

The report also offers a design for a process to allow key stakeholders to participate in refreshing the NWI.

Concluding their overall assessment of whether or not the NWI should be refreshed, this group of current and future leaders says:

There is an opportunity to build on the success of the NWI and complete unfinished business.

Reinvigorating the NWI requires a coordinated effort to build teams across the water sector in order to develop the next generation of water policy.

### **Reference**

Bester A. et al. (2014) *A future for the National Water Initiative? A case study approach*. Peter Cullen Trust, Canberra.

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## **‘Defining the role of science in policy’**

In 2006 Peter Cullen said:

Scientists should not expect that their scientific standing gives them any special right to decide value questions for society. Their science needs to inform the debate, not replace the debate.

The report ‘Defining the role of science in policy’, by the 2014 Leadership Program participants, now Fellows, gives a brief collation and analysis of these Fellows’ perspectives on the role of science in policy. Eight of this group of Fellows work in policy, engineering, irrigation, consulting and management, and six are scientists.

Their report presents an agreed decision-making process as well as some pre-conditions and risks for scientists who act as advocates.

**Note:** Friends and Fellows of the Trust hold differing individual opinions about advocacy. The Trust itself does not engage in advocacy.

### **Reference**

Page D. et al. (2014) *Defining the role of science in policy*. Peter Cullen Trust, Canberra.



Following the thread of an argument? Three of the 2014 Fellows during the Leadership Program.

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## **‘Leadership learnings’**

The report ‘Leadership learnings’ presents word clouds and quotes from the 14 Fellows of 2014 who, as in all the Leadership Programs, are a varied group from across Australia. The report neatly confirms the way the participants in the Trust’s Leadership Program see and value inclusive leadership and communication.

### **Reference**

Bester A. et al. (2014) *Leadership learnings*. Peter Cullen Trust, Canberra.

# Women in water – leadership reflections

## Fellows intimate lunch with Friends in Melbourne

*Dr Amber Clarke\* and Dr Phil Wallis\**

**The** 2015 series of 'intimate lunches' for Peter Cullen Trust Fellows in Victoria kicked off in February with a fantastic double-bill of speakers reflecting on leadership from the perspective of women in the water industry. Places sold out in record time, proving the ongoing popularity of the intimate lunch format.

Professor Jane Doolan and Ms Robyn McLeod, both of them Friends of the Peter Cullen Trust, joined 10 Fellows of the Trust at the lovely La Vita Buona for a delicious lunch and inspiring presentations followed by a roundtable discussion.

The speakers were invited to give frank presentations under the Chatham House Rule, so what follows is a high level summary of the key points made throughout the lunch.

- Gain respect by delivering achievements.
- Don't let yourself get intimidated or bullied.
- Make friends, not networks.
- Make a difference in water.
- Have a strong agenda for what you want to do/achieve.
- You need to be able to win people over to your cause.
- You need to demonstrate commitment to that agenda.
- Show that you value the team and give them credit for their work and cover their backs when necessary.

The group had a general discussion following the two presentations, and covered a wide range of topics including:

- the importance of securing past water reforms in what is currently a period of consolidation; the difficulty of solving issues in the next wave of reform (such as boundary issues crossing multiple portfolios); and the need to understand the long history of water reform and how we can contribute and build on past work. Water reform is a 'long game', and the long-term narrative of what has been achieved is really important.

The need to:

- get better at demonstrating and communicating the outcomes we are achieving; and create key policy hooks/platforms from which to pursue an agenda; and distinguish between influence and power, with women often in very influential roles without being seen as a traditional type of power player.

We also agreed that:

- there are many learning and development tools that are useful, including further tertiary education, collaborating with good leaders, reflecting on major projects and achievements, on-the-job learning, mentoring, active listening and more.

*\*Dr Philip Wallis, a 2010 Fellow & Dr Amber Clarke, 2013 DEPI Fellow of the Trust*



(L-r): Emma Bishop (2013), Amber Clarke (2013), Robyn McLeod (speaker), Bridget Wetherall (2013), Brendan Barry (2013), Geoff Vietz (2010), Tamara Boyd (2011), Chris Arnott (2010), Jane Doolan (speaker), Sarina Loo (2010), Lisa Ehrenfried (2014), Philip Wallis (2010, camera).

## News from the Board

In March, the Board of the Peter Cullen Water & Environment Trust welcomed Suzy Nethercott-Watson CSM as a new Director. Ms Nethercott-Watson joins Professor the Hon. John Thwaites, Professor John Langford AM, Professor Craig Pearson, Brett Tucker, Brendan Barry and Dr Paul Frazier.

Suzy Nethercott-Watson CSM has had a diverse career in the military, private and public sectors. Her most recent public-sector positions were within the Commonwealth water policy and program arena in senior executive roles, leading areas that looked after water efficiency projects worth billions of dollars. For almost two years Suzy was head of the Office of Water Science which was involved in research and legislation programs, and which set up the statutory Independent Expert Scientific Committee to examine water-related impacts from coal seam gas and large-scale coal mining. Suzy holds a degree in Geography, an honours degree in Management, a Masters degree in Commercial Law and an advanced Diploma of Project Management, and she is an accredited Master Program Director.

The Board has a policy of enhancing Fellows' skills by providing an opportunity for up to three Fellows to join the Board. Dr Kirsten Shelly (a 2011 Fellow) recently stepped down, near the end of her 3-year term, to take on a new job as Senior Adviser with responsibility for water, in the Government of Victoria. Kirsten had been working in similarly senior roles for the Queensland Government in relation to water management and supply and strategy ever since she graduated from the Trust's Leadership Program in late 2011. She was the second Fellow to join the Board (in November 2012) and has excelled in that role. Together with Dr Sarina Loo (2010 VDSE Fellow of the Trust) she proposed the formation of the Trust's very successful National Fellows Network. In August 2014 Brendan Barry (2013 Cotton Australia/Cotton RDC Fellow of the Trust) and Dr Paul Frazier (2012 Eco Logical Australia Fellow of the Trust) became Directors. They are about to be joined in mid-2015 by Kaye Cavanagh (a 2011 Fellow) who has been chosen from a short-list of three who were elected by the Fellows group.

# Developing the north: Gilbert and Flinders Rivers

*Dr Richard Cresswell\**

**I**t is no accident that the north of Australia has not been developed for agriculture in the same way as more southern regions. The stresses that exist in those tropical areas include year-round heat, extreme wet and dry seasons, soils of generally low and variable fertility and an opportunistic wildlife, both native and imported.

Five years ago, whilst at CSIRO, I was part of a team that assessed the water resources of northern Australia<sup>[1]</sup> for the Australian Government. One of the key messages we drew from this work was the importance of groundwater for many northern systems and the critical nature of surface water–groundwater interactions. We highlighted the great potential for sustainably increasing groundwater use for development and this was further discussed in the Northern Australia Land and Water Science Review<sup>[2]</sup> with a key message stating:

The development of irrigated agriculture in northern Australia is limited by water availability and poor soils. The best development option for agriculture might be small cropped areas, irrigated with groundwater, and scattered over the landscape.

The long history of small-scale agriculture in the region was made possible because farming adopted practices that were suited to the fickle tropical systems. Asian farmers<sup>[3]</sup> across the north in the late 19th century, for instance, used labour-intensive farming practices which were adapted to these conditions. However, anti-Asian sentiment during the 20th century stopped all foreign activity in the north, effectively stalling agricultural development there for decades.



(Above) Cattle in spinifex pasture near Hughenden, Flinders River catchment. Photo: J. Coppi, CSIRO, 1992.

(Below) Rivers of the gulf country beneath a 'Morning Glory' roll cloud, from the air. Photo: Russell White, dropbears.com © 1994.



Small-scale agriculture has now been successfully re-developed in and around the Darwin region with a major contribution from groundwater.

The highly seasonal monsoon rains almost annually re-fill the shallow aquifers, allowing draw-down through the dry season and permitting continuous irrigated agriculture to take place. There is, however, little potential to increase this storage, and the local aquifers struggle in many years to fill because the number of bores has increased to capacity.

Fortunately, this is a self-limiting system. At the end of each wet season, the precise amount of water available for the following 6–9 months can be determined and allocations assigned based on priority of use.

## **It's a different story in far north Queensland**

Predictability of the groundwater resource is not possible over much of the rest of northern Australia, however. A holistic appraisal of 'the feasibility, economic viability and sustainability of agricultural development' in the Gilbert and Flinders catchments of northern Queensland, recently completed by CSIRO<sup>[4]</sup>, determined that groundwater was not a viable water source for development.

Critically, as one of its outcomes the study demonstrated that recharge expectations based on those of southern rivers did not apply to these expansive, ephemeral rivers with heavy-textured soils and in a climate of very high evaporation.

It is another example showing we should not make assumptions about the waters of northern Australia based on our knowledge from the south.

The study also noted that 'the negative impact to ecosystem service, social and economic values is not balanced by the positive benefits of irrigation development'<sup>[5]</sup>. Critically, work on water diversions for the development found that earlier work had been based on flawed flow characteristics, and potential environmental consequences may be significant<sup>[6]</sup>.

Fortunately, the Joint Committee on Northern Australia<sup>[7]</sup> recognises 'that large-scale extraction of water from the river systems and aquifers in Northern Australia needs to be preceded by thorough scientific evaluation'. A key recommendation is 'that the Australian Government gives priority to the development and funding of water resource proposals that have been scientifically identified as being sustainable and with the strongest cost–benefit case, and consistent with National Water Policy'. Further, 'that the government proceed with its election proposal to set up the Water Project Development Fund ... for water management proposals for Northern Australia'.

The next step is to ensure that those recommendations are heard and acted upon.

*References are on the next page.*

*This is a companion article to one on development of the Ord River, WA, by Richard Cresswell in RipRap no. 38, mid-2015.*

*\*Dr Richard Cresswell is the 2012 SKM Fellow of the Trust*

# Field trip to Gregory, Gulf of Carpentaria, Queensland

Dr Declan Page\* and Dr Cuan Petheram\*



CSIRO scientists and a manager from Northern Project Contracting on the banks of the Gregory River near Gregory. Declan Page and Cuan Petheram are third from left and second from right, respectively. Photo: Fiona Walsh (CSIRO).

The Gulf Country area, highlighting the Gregory, Flinders and Gilbert Rivers, Gregory Downs and Hughenden, and showing the Queensland–Northern Territory border. Legend: grey 0–200 m above sea level; brown: 200–500 m asl; dark brown: 500–1000 m asl. Source: Australia 1:5,000,000 General Reference Map, Third edition, Commonwealth of Australia.

## Developing the north, continued from page 4

### References (using shortened links for several)

- [1] CSIRO (2009) Water in northern Australia. Summary of reports to the Australian Government from the CSIRO Northern Australia Sustainable Yields Project. <http://bit.ly/IH6o8WVf>
- [2] Northern Australia Land and Water Science Review 2009 Chapter Summaries. Department of Infrastructure, Transport, Regional Development and Local Government. ISBN – 978-1-921095-95-5. <http://bit.ly/IDZuVga>
- [3] Chung Wah Society (2015) NT Chinese Museum. Short history. <http://www.chungwahnt.asn.au/index.php?page=short-history>
- [4] CSIRO (2013) Flinders and Gilbert Agricultural Resource Assessment: Overview and findings. <http://bit.ly/lckMTUub>
- [5] Crossman ND & Bark RH (2013) Socio-economics: triple-bottom-line accounting. A technical report to the Australian Government from the CSIRO Flinders and Gilbert Agricultural Resource Assessment, part of the North Queensland Irrigated Agriculture Strategy. CSIRO Water for a Healthy Country and Sustainable Agriculture flagships, Australia.
- [6] Lee A., Voogt S., Harding P. & Loy A. (2013) Design flood hydrology for selected dam sites in the Flinders and Gilbert catchments. Technical report to the Australian Government from the CSIRO Flinders and Gilbert Agricultural Resource Assessment, part of the North Queensland Irrigated Agriculture Strategy.
- [7] Joint Committee on Northern Australia (2014) Pivot North. Inquiry into the Development of Northern Australia: Final Report. <http://www.aph.gov.au/jscna/report>

**Two** Peter Cullen Trust Fellows – Declan Page and Cuan Petheram – participated in a field trip to far north-western Queensland in late January 2015. At that time of year, the season can have weather forecasts of >40°C, high humidity and the potential for roads to be closed due to flooding. The trip included flying a very diverse group of CSIRO scientists to Mt Isa and then travelling 600 km by 4WD to the small township of Gregory (population 12). The town is about 200 km north of Mt Isa and 100 km east of the Boodjamulla National Park and sits on the stunningly beautiful Gregory River. This river is one of the few perennial rivers in the Gulf region, and as such is of high significance to locals there.

The trip was timely as the economic development of northern Australia is currently on the agenda of the Federal Government and the three northern jurisdictions. Development can span a range of scales from big infrastructure developments like dams and broad-scale irrigation schemes to small community and farm-scale enterprises. Our trip to Gregory was to investigate the opportunities for the latter: small community/farm-scale enterprises that could be operated by the local Indigenous traditional owners, the Waanyi people.

Some Waanyi people already live at Gregory, but over the next few decades more Waanyi people are hoping to move from nearby larger settlements such as Doomadgee and resettle at Gregory, where they have strong historical and cultural connections. However, to do so they need to develop a level of sustainable economic activity that will provide jobs for their people and well-being for their community. Northern Project Contracting (NPC) ([www.npcgroup.com.au](http://www.npcgroup.com.au)), an Indigenous-owned company that is part of the Waanyi Aboriginal Corporation, are looking to support the development of community-scale agricultural enterprise in Gregory. However, before they pursued any

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one form of agricultural development, the Waanyi people, through NPC, wanted to scope out the range and scale of potential opportunities. So it was that we joined 12 other scientists with a diverse range of expertise including agronomy, anthropology, ethnobotany, remote energy systems, surface-water resource assessment, soil science, groundwater assessment, water quality and treatment, rangelands ecology, economics and biosecurity to look at opportunities for Gregory.

One aim for us is to provide advice about optimising the benefits of new technology and the need for remote maintenance of water, energy and agricultural infrastructure given that currently there is a very small population and limited technical capacity in the area. This alone will be a significant outcome and has important implications for the way technology is applied across northern Australia.

While some of the research would be very site specific, the visit highlights many of the opportunities and risks that may attend a development of this kind elsewhere in northern Australia. Much has been learned from the trip and from past attempts at horticultural enterprises, including Indigenous enterprises. The success factors and pitfalls identified from this study will complement other recent studies investigating opportunities and risks for economic development in northern Australia.

*\*Dr Cuan Petheram (2012) & Dr Declan Page (2014)  
are both CSIRO Fellows of the Peter Cullen Trust*



Above right: Luke Stower, a 'Most innovative Grower of the Year'. Photo: Dianne Pain, Dust to Dawn Photography.



**Dr Clare Taylor** (2010), who is the Coordinator of the Kimberley to Cape initiative (KtC; [www.kimberleytocape.net.au](http://www.kimberleytocape.net.au)) **writes:** This year I've been working on focusing Kimberley to Cape's role, which is to:

1. facilitate conversations and collaboration to articulate a shared picture of what success looks like for northern Australia;
2. help coordinate action and evidence-based advocacy to make progress towards this shared picture;
3. provide forums for knowledge exchange and discussion so organisations know what's going on across northern Australia;
4. identify emerging threats and opportunities, and critical gaps in current activities, knowledge, approaches or partnerships, and seek to initiate coordinated responses;
5. monitor and evaluate at a high level our collective actions and impacts.

I've just circulated the first of a regular collation of newsclips relevant to northern Australia, with a view to facilitating better knowledge exchange and hence more opportunities for collaboration. They can be found at <http://www.kimberleytocape.net.au/updates/>. I am also setting up teleconference groups to coordinate action on specific topics such as place-based planning, weeds/ferals and post-2018 funding for land management.

I've also been promoting work on our amazing savanna (see the *Eucalypts of northern Australia* report on our website); coordinating contributions to an evidence-base; drafting a story on environmentally sustainable agricultural futures for northern Australia to identify common ground; and seeking funding to keep Kimberley to Cape going.

It's very busy here at times, but there are so many opportunities. If you are interested in supporting or collaborating with Kimberley to Cape, please do get in touch: [kimberleytocape@inet.net.au](mailto:kimberleytocape@inet.net.au).

**Jane Trindall** (2014 Cotton RDC Fellow of the Trust) sent a link to the *Queensland Country Life* article about the St George Cotton Growers' Award for Most Innovative Grower of the Year. The award was shared recently by **Luke Stower** (2014 Cotton Australia /CRDC Fellow of the Peter Cullen Trust) of Balonne Plains (pictured at left with joint winner Chad Prescott). See: [www.queenslandcountrylife.com.au/news/agriculture/cropping/cotton/st-george-cotton-growers-honoured/2725195.aspx](http://www.queenslandcountrylife.com.au/news/agriculture/cropping/cotton/st-george-cotton-growers-honoured/2725195.aspx)

**Dr Dena Fam** (a 2013 RBC Fellow of the Trust) **writes:** I am currently part of an international team selected to compete with six other teams to design innovative water and sanitation systems for rural indigenous Alaskan communities. (The photo at left shows Dena on-site; other photos, next page.)

The competition – the Alaska Water and Sewer Challenge – was initiated and funded by the Alaskan Government (Department of Environment and Conservation) to try and solve a decades-old problem of inappropriate systems of water and sanitation in remote rural indigenous communities. Around 6000 people live in these communities across Alaska, with inadequate access to water and sanitation systems resulting in poor public and environmental

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health. My role in the challenge was to engage with and research water-use habits, sewage management practices and the potential support for technological and institutional innovation in two rural communities, Wales and Tuntutuliak.

For remote rural communities in sparsely populated regions such as these, centralised sewerage and water supply systems are not economically viable. They are not only too expensive to build and repair, but also the skills and funding required to operate and maintain them in these harsh Arctic climates make them unsustainable in the long term.

To determine the most culturally and economically viable system for these communities we used story-telling – that is, a ‘narrative inquiry’ approach – to bridge the gap between engineering and cultural constraints. This helped us to understand, through stories, how people use and manage their water and sewage in this environment. It gave us insight into the complexity of the barriers to and opportunities for implementing alternative sanitation options. And we were better able to understand personal everyday interactions with sanitary technology.

The vast majority of remote Alaskan communities collect their water from local ice, rivers, rainwater or wells. Communities have distinct preferences (e.g. how water should taste) and washing practices (e.g. steam baths as opposed to showers). Many of them live partially subsistent lifestyles, supplementing seasonal whaling, seal hunting and fishing by reindeer farming and local arts and crafts, and therefore have limited income. Therefore one of the challenges in designing a system is the lack of revenue available for operating and maintaining the service. They aim for self-sufficiency, and commonly dump sewage into open trenches or lagoons.

Our final system design is based on the information we collected and analysed on-site from 25 members of the community, local tribal council leaders, utility operators, public health professionals and government funded engineers.

Based on the findings of the social research we have developed low tech, low cost options that we believe will be acceptable not only socially but also in terms of low skilled operation and maintenance, and will ultimately reach our goal of improved public health. To ensure community engagement, draft options will be presented to the community to determine social acceptance and feedback before the final design is submitted to the Alaskan Government in late June.

**Dr Adam Bester** (2014 Victoria Dept of Environment & Primary Industries Fellow of the Trust) **writes:** I am currently leading a project being undertaken in conjunction with the Dept of Environment, Land, Water & Planning, the Victorian Environmental Water Holder and other Victorian Catchment Management Authorities looking into valuing the social benefits of Victorian waterway management. The purpose of the project is to develop robust social and economic arguments for future investment business cases. The project will be completed by 30 July 2015. **Tamara Boyd** (a 2011 Fellow of the Trust), from Intrinsic Scope, has been working



Photos above are from Dena, showing where she was working in Alaska. An article about the project is at: <http://www.smh.com.au/national/beyond-taps-toilets-in-alaska-20150316-13z5gf>

with us on this project and will be developing case studies to support our waterways program and investment business case.

**Dr Sondoss ElSawah** (2014 Professor John Langford Fellow of the Trust) **writes** that she has another publication in print: Lucena-Moya P., Brawata R., Kath J., Harrison E., ElSawah S. & Dyer F. (2015) Discretization of continuous predictor variables in Bayesian networks: An ecological threshold approach. *Environmental Modelling & Software* **66**, 36–45.

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**Professor Mark Taylor** (a 2010 Fellow of the Trust) was on the ABC television 7.30 Report recently, advising on the lead contamination of drinking water from old corroded water pipes in north-eastern Tasmania (see <http://www.abc.net.au/news/2015-04-23/north-east-tasmania-water-may-have-been-contaminated-for-years/6417126>).

**Dr Philip Wallis** (a 2010 Fellow of the Trust) writes: I'm happy to announce the early arrival of Hugo George Wallis. Beth is doing well and Archer is excited to have a little brother.

**Dr Emma Carmody** (a 2013 RBC Fellow of the Trust) writes: I have just started back part-time as Policy & Law Reform Solicitor at the Environmental Defenders Office NSW, after a year's maternity leave.

## Riverspace – unrealised potential for publicising inland waters

### A 'BRIDGING' review

**The** Riverspace website is a central independent location where people working on or beside inland waters anywhere in Australia can publicise their activities, progress and results.

The site has the potential to provide readers with information about *anything* and *everything* happening on, in and around rivers and wetlands everywhere. Typical contributors could be not-for-profit and community groups, government (all levels) and statutory bodies, river or wetland-based businesses, fishing and boating groups, managers of land beside the waters, research teams and many others. There is normally a small-medium cost, depending on type of group and number of projects.

This central oneness of Riverspace is a timesaver for readers. The website should be ideal as a first 'port of call' to find out about an area or about types of activity across Australia – much more convenient than having to brainstorm what *might* be happening in an area and then delve through a series of disparate websites where information is probably not arranged by location or activity.

Riverspace is an initiative of Peter Cullen Trust Fellow (2010) Dr Deborah Nias and Trust Friend Dr Siwan Lovett, both of whom manage not-for-profit businesses and have for some years been leading, managing and communicating about rivers and wetlands and their environmental values.

The site claims to be the only website of its kind in the world. Its novelty may partly explain why the content on Riverspace is relatively sparse so far.

### Ease of use

Quoting from the site: 'Riverspace uses a sophisticated, yet well-known Google map interface, enabling users to zoom in and out and discover a wealth of information at a range of scales.'

Information is entered under topics ('stories') in 10 categories, and by State or Territory ('locations'). Clicking on an icon on the map zooms you in to the information/story about that site. When reviewed there were around 30 sites and stories on the website, with at least one in each state or territory and many in NSW, Victoria and Queensland. Some appear in several categories.

For people uploading information there are guides on the website, and the backroom team provides (quoting) 'an independently managed website, staffed by a professional and experienced science communication team, who can advise and assist on the best way to feature the work [you] are undertaking in ways that make it relevant and meaningful for people'.

### Relevant, and designed to grow

Riverspace appears to be a valuable online resource through which to spread the word about work on inland waters to a keen audience that is engaged.

Not surprisingly, some entries involve Fellows of the Trust. Under 'Community Involvement' is the story of 2012

**RIVERSPACE**  
[www.riverspace.com.au](http://www.riverspace.com.au)

**FREE UPLOADS! ACT NOW**

For a limited time, Siwan and Deborah have decided that ALL new projects and entries can be uploaded to Riverspace.com.au *FOR NO CHARGE*.

This is an excellent opportunity to publicise inland water work to the right audience, while adding value to the site itself.

Email: [hello@riverspace.com.au](mailto:hello@riverspace.com.au)



Riverspace home page (May 2015) as a screen shot [www.riverspace.com.au](http://www.riverspace.com.au)

Fellow Dr Ben Dyer. Among several other examples, two (under Riparian Revegetation) are the Rivers of Carbon project part-run by Lori Gould (2014 National Water Commission Fellow of the Trust), and the Glenelg River Restoration Project in which Dr Adam Bester (2014 VDEPI Fellow of the Trust) had a major role.

This reviewer can think of a number of other projects, plans, research teams and

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## Riverspace – unrealised potential, continued from page 8

groups (beyond the Peter Cullen Trust) that could usefully upload information to Riverspace – potentially benefiting both themselves, by greater exposure, and the way rivers and wetlands are valued by the general public. The more the groups and businesses that are aware of and publishing on Riverspace, the more useful the site will be. The more widespread the information, the more the visiting readers, and the better the exposure for contributors.

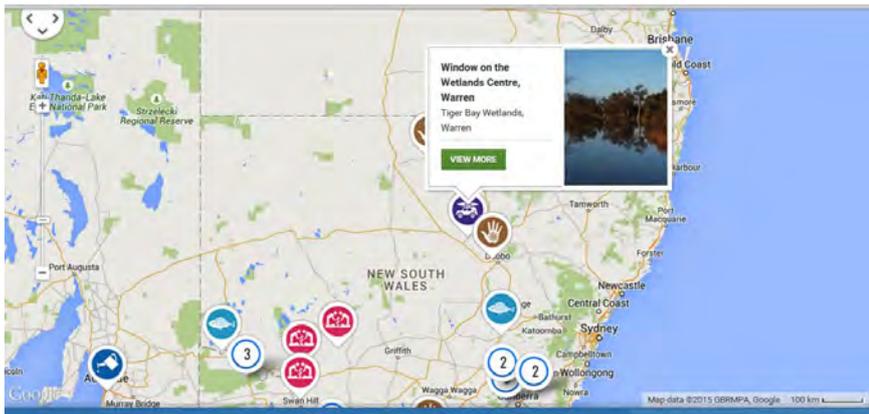
### Overall

In concept Riverspace is innovative and appears an ideal and convenient way of bringing together a wide range of types of information about inland waters. It is surprising that the site is not more populated already.

The text for each story usually includes links to further information and to the providers, adding to the value of this website as a starting point in a search.

In practice, for readers the operation of the site is smooth, particularly once you know that you can jump or scroll down the page as soon as the ‘View more’ text has appeared (this reviewer had to be told).

Overall, Riverspace deserves to be in wide and frequent use, both by providers and by readers. It is to be hoped that Siwan’s and Deborah’s generous offer of free posting (see box above) will help the site become a great ‘place for rivers, wetlands and people’.



A typical title box that appears once you click on an icon on the main map and have been zoomed in. Choosing ‘View more’ takes you to the relevant text and further information. [www.riverspace.com.au](http://www.riverspace.com.au)

## Some forthcoming events in water & environment around Australia

Date, time	Event and other details	Location (colours distinguish the states/territories)	Contact or link
20 May Weds 7.30 am	‘Food for thought: A breakfast with the Minister’ AWA (WA)	Hyatt Hotel, Perth WA	<a href="http://www.awa.asn.au/EventDetail.aspx?id=4294980109">http://www.awa.asn.au/EventDetail.aspx?id=4294980109</a> Siobhan Jennings, wabran@awa.asn.au
22 May Friday 7 pm – midnight	Young Water Professionals Dinner with keynote speaker (and dance) AWA (Vic)	Ormond Hall, Melbourne, Vic	<a href="http://www.awa.asn.au/EventDetail.aspx?id=4294980006">http://www.awa.asn.au/EventDetail.aspx?id=4294980006</a> Gail, vicbranch@awa.asn.au
26 May Tues 5.15–6.45 pm	MONA Heavy metal project & IMAS tour AWA (Tasmania)	IMAS, Castray Esplanade, Battery Point, Hobart Tas	<a href="http://www.awa.asn.au/EventDetail.aspx?id=4294979901">http://www.awa.asn.au/EventDetail.aspx?id=4294979901</a> Carmel Clark, tasbranch@awa.asn.au
30 May Sat 10 am – lunch	‘Carnegie Wave Energy Tour’ AWA (WA) Young Water Professionals	HMAS Stirling, Garden Island, near Perth WA	<a href="http://www.awa.asn.au/EventDetail.aspx?id=4294980188">http://www.awa.asn.au/EventDetail.aspx?id=4294980188</a> Siobhan Jennings, wabran@awa.asn.au
2 June – 30 July	‘Listening to local Managed Aquifer Recharge progress, plans and implementation issues’ Distinguished Lecture tour (Dr Peter Dillon) National Centre for Groundwater Research & Training	<b>All 8 capitals:</b> Brisbane (2 June) – Darwin (30 July)	<a href="http://www.groundwater.com.au/events/82">http://www.groundwater.com.au/events/82</a> See link for date and time in each state/territory..
4–5 June	‘Legislation, Environmental Approvals and Policy (LEAP) Summit’ Environmental Institute of Australia & New Zealand (EIANZ) – SE Qld	Brisbane Qld	<a href="http://www.eianz.org">www.eianz.org</a> > events > South East Queensland Ph. 07 5429 8480, Danielle Bolton
10 June Weds	‘ACT Water Matters conference’ AWA (ACT)	CSIRO Discovery Centre, Canberra ACT	Ph. 02 9436 0055, Audrey Braun <a href="mailto:actbranch@awa.asn.au">actbranch@awa.asn.au</a>

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14–17 June	'WATERMATEX 2015' IWA Symposium on Systems Analysis and Integrated Assessment	Gold Coast Qld	<a href="http://www.awmc.uq.edu.au/conf/watermadox2015">http://www.awmc.uq.edu.au/conf/watermadox2015</a>
25 June Thur	Breakfast seminar, 'CSG and Water' AWA (NSW)	NSW (no details available yet)	<a href="mailto:events@awa.asn.au">events@awa.asn.au</a>
25 June Thur	30th Anniversary fundraising dinner Environmental Defenders Office (EDO NSW)	Museum of Contemporary Art, George St, Sydney NSW	<a href="http://www.edonsw.org.au/dinnerfundraising@edonsw.org.au">http://www.edonsw.org.au/dinnerfundraising@edonsw.org.au</a>
3 July Friday	'Tasmanian Soil Forum'	University of Tasmania, Newnham campus, Launceston Tas	Register and pay via <a href="mailto:chris.grose@dpipwe.tas.gov.au">chris.grose@dpipwe.tas.gov.au</a> by 26 June
7–10 July	National Carbon Farming conference and expo 2015	Albury NSW	<a href="http://carbonfarmingconference.com.au/CarbonConference2015/home.htm">http://carbonfarmingconference.com.au/CarbonConference2015/home.htm</a> <a href="mailto:louisa@carbonfarmersofaustralia.com.au">louisa@carbonfarmersofaustralia.com.au</a> <a href="mailto:jangrady@innovent.com.au">jangrady@innovent.com.au</a>
9 July Thur 9 am – 4 pm	'How do we improve the resilience of revegetated ecosystems in the presence of climate change?' Greening Australia Forum	La Trobe University, Bundoora, Vic	Elisa Raulings, ph. 03 9450 5300 <a href="mailto:mel.general@greeningaustralia.org.au">mel.general@greeningaustralia.org.au</a>
14 July Tues	'Soil to save our planet' Research Symposium 2015	The University of Sydney, Sydney NSW	<a href="http://sydney.edu.au/agriculture/outreach/symposium.shtml">http://sydney.edu.au/agriculture/outreach/symposium.shtml</a>
15–17 July	'Prosperity points north' Urban Development Institute of Australia (NT)	Darwin Convention Centre, Darwin NT	<a href="http://www.udiant.com.au/calendar/udia-nt-prosperity-points-north-conference">http://www.udiant.com.au/calendar/udia-nt-prosperity-points-north-conference</a>
20–22 July	'Developing northern Australia conference, economically and socially' Association for Sustainability in Business Inc.	Rydges Southbank, Townsville Qld	<a href="http://northaust.org.au/">http://northaust.org.au/</a> Ph: 07 5502 2068 <a href="mailto:secretariat@northaust.org.au">secretariat@northaust.org.au</a>
11 August Tues 9 am – 4 pm	'Forum on the state of rivers, creeks, lakes & ponds' EIANZ – ACT (Environmental Institute of Australia & New Zealand)	University House ANU, Canberra ACT	For program: <a href="mailto:richard.s@ngghenvironmental.com.au">richard.s@ngghenvironmental.com.au</a> For registration: <a href="mailto:office@eianz.org">office@eianz.org</a>
18 August Tues 11 am – 12	'Evaluating the competitive use of the subsurface: the influence of energy storage and production in groundwater'. Dr Rainer Helmig; the 2015 Henry Darcy Distinguished Lecture in Groundwater Science.	Flinders University, Victoria Square, Adelaide SA	<a href="http://www.groundwater.com.au/events/93">http://www.groundwater.com.au/events/93</a> National Centre for Groundwater Research and Training
1–3 September	'From the ground up' NSW Landcare conference	Turners Vineyard, Orange NSW	<a href="http://centraltablelands.ils.nsw.gov.au/resource-hub/events/2015/nsw-landcare-conference">http://centraltablelands.ils.nsw.gov.au/resource-hub/events/2015/nsw-landcare-conference</a>
7–9 September	WA Soils conference 'Celebrating soils 2015'	The Atrium, Mandurah WA	<a href="mailto:waconference@soilscienceaustralia.org">waconference@soilscienceaustralia.org</a>
8–9 September	2nd Water Sensitive Cities conference	Brisbane City Hall, Brisbane Qld	<a href="http://watersensitivecities.org.au/save-the-date-brisbane-confirmed-as-the-host-of-the-2nd-water-sensitive-cities-conference/">http://watersensitivecities.org.au/save-the-date-brisbane-confirmed-as-the-host-of-the-2nd-water-sensitive-cities-conference/</a>
21–23 September	18th International Riversymposium	Brisbane Qld	<a href="http://www.riversymposium.com">www.riversymposium.com</a>
During 21–23 September	'Promoting leadership – multiple paths leading in one direction' Peter Cullen Trust Fellows session	Brisbane Qld	<a href="http://petercullentrust.com.au">http://petercullentrust.com.au</a> Fellows, via <a href="mailto:office@petercullentrust.com.au">office@petercullentrust.com.au</a>
27 September – 4 October	Red Centre Bird Festival	Alice Springs Desert Park and surrounds, Alice Springs NT	<a href="https://www.discovercentralaustralia.com/events/Red-Centre-Bird-Festival.aspx">https://www.discovercentralaustralia.com/events/Red-Centre-Bird-Festival.aspx</a> Ph. 08 8951 8788
12–15 October	'Weeds – the future, innovation & adaptation' 18th NSW Weeds conference.	Cooma NSW	<a href="http://www.weedscooma.com.au/">http://www.weedscooma.com.au/</a>
19–20 October	2015 Water Sensitive Urban Design / International Erosion Control Association conference: 'H2Olistic integration: Concept design, construction and operation'	Sydney, NSW	<a href="mailto:registration@gemspl.com.au">registration@gemspl.com.au</a> Ph. 02 9744 5252
27–29 October	Strategic Foresight Training & Synthesis Workshop: 'Horizon scanning and scenarios for wetlands management' Society of Wetland Scientists, Oceania Chapter,	Sydney Olympic Park	<a href="http://sws.org/Oceania/oceania-chapter-events.html">http://sws.org/Oceania/oceania-chapter-events.html</a> Sam Capon, <a href="mailto:s.capon@griffith.edu.au">s.capon@griffith.edu.au</a>

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29–30 October	'Challenging the status quo. Excellence in environmental practice' EIANZ annual conference	Perth WA	<a href="http://www.eianz.org/document/item/2843">http://www.eianz.org/document/item/2843</a>
3–5 November	'Australian Groundwater Conference 2015' National Centre for Groundwater Research & Training	Shine Dome, ANU, Canberra ACT	<a href="http://www.groundwater.com.au/events/92">http://www.groundwater.com.au/events/92</a>
11–12 November	Territory NRM annual conference	Darwin NT	<a href="http://www.territorynrm.org.au/2014-conference/">http://www.territorynrm.org.au/2014-conference/</a>
23–26 November	Australian Society for Limnology Congress 2015: 'The changing freshwater landscape: Collaboration, communication and communities'	Silverstream Retreat, near Wellington New Zealand.	<a href="http://freshwater.science.org.nz/index.php/">http://freshwater.science.org.nz/index.php/</a>
26 November late afternoon – evening	Peter Cullen Trust new Fellows graduation presentation and dinner	Canberra ACT	<a href="http://petercullentrust.com.au">http://petercullentrust.com.au</a> Ph. 02 6206 8606
29 Nov – 4 December	'MODSIM 2015: 21st International Congress on Modelling and Simulation'	Broadbeach, Gold Coast Qld	<a href="http://www.mssanz.org.au/modsim2015">http://www.mssanz.org.au/modsim2015</a> Tony Weber & Dr Malcolm McPhee modsim2015@mssanz.org.au
7–10 December	36th Hydrology and Water Resources Symposium: 'The art and science of water'	Hobart Tasmania	<a href="http://www.hwrs2015.com.au/">http://www.hwrs2015.com.au/</a> Ph. 03 9321 1790, hwrs2015@engineersaustralia.org.au

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# Letter from a Friend

## *Bioregional assessments: A truly inter-disciplinary scientific program*



**This** article came about through the form of an open invitation to write about something I am passionate about that is connected to water. What an invitation! It was no surprise that it took me

a while to settle on the right words to connect with an unseen audience.

I want to share with you my experience of a program that I looked after in my previous job. It represents a personal chapter of pride and enduring respect for the many dedicated, committed and clever people that I encountered whilst working on it. It's well within the water space, but the feature that I hope will tickle a few peoples' interest is that it's a scientific program that is truly inter-disciplinary at its core, centering as it does on an examination of groundwater and surface water as a total interconnected system. I'm sure there are some hydrogeologists out there who have perked up with that sentence. You may have heard about this program: with its very large technical scientific workforce this is a team breaking exciting new ground on how to conceptualise and then deliver new scientific information.

This Bioregional Assessments program will provide a better understanding of water assets and the way surface and groundwater are connected locally. The assessments are being done in approximately 20 regions across four states. In many areas, it will be the first time that this wide range of information has been brought together to one publicly accessible place.

A bioregional assessment is a scientific analysis of a particular area including its ecology, hydrology, geology and hydrogeology, with explicit assessment of the potential direct, indirect and cumulative impacts of coal seam gas and large coal mining development on water resources. This includes improving our understanding of the connectivity between different groundwater aquifers and their connection to surface water.

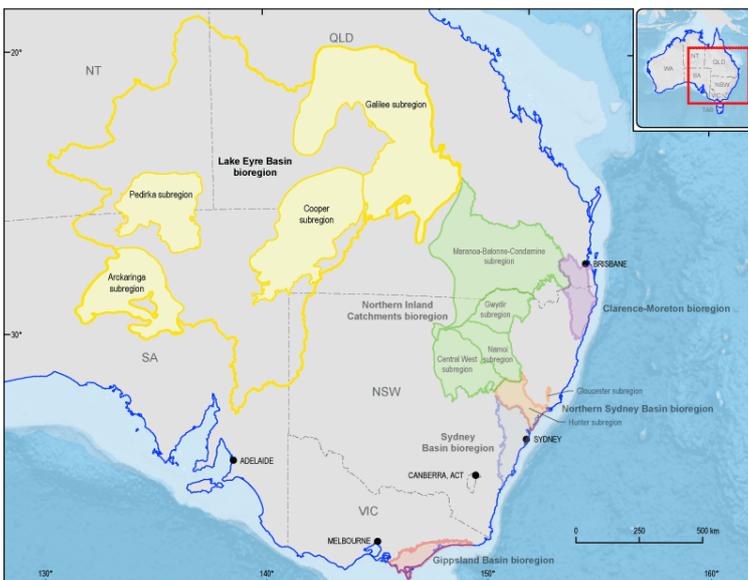
For many regions considerable work has already been undertaken towards understanding the hydrological, hydrogeological and ecological characteristics, but there are frequently gaps in understanding how these interrelate and how they are likely to be affected by coal and coal seam gas developments. Bioregional assessments are aimed at characterising regional water-related assets, articulating the relationships and dependencies of these attributes and their vulnerability to changes in water quality or volume. Each bioregional assessment will be different, due in part to regional differences but also in response to the availability of data, information and fit-for-purpose models.

This program holds special interest for me, though, for several reasons. First, I was lucky enough to participate in its establishment and operation. Second, it was initiated to try and understand the expected impacts on identified water-related assets as a result of coal seam gas extraction and coal mining which, in this resource-focused era, is critical if we are to juggle societal developmental tasks with a functioning environment – not just a barely-surviving one. Third, this is first principle science – a complex and thorough methodology that forces interdisciplinary thinking. Fourth, it was clear that there is great strength in this science in its approach and findings, but if it cannot be communicated in a way that people can understand and that makes for better information for regulatory decisions, then the value of the science itself will be undermined or just ignored. The truism of that last sentence is what makes delivering science in this modern age so critically different from the past.

I hope your interest has been piqued and that you will check-out the depth of this program at <http://bioregionalassessments.gov.au/>.

*Suzy Nethercott-Watson CSM*  
**Friend of the Peter Cullen Trust**

(Suzy has recently joined the Board of the Trust; see page 3.)



Regions being studied by the Bioregional Assessments team.  
(Map reproduced with their permission.)

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