



The latest in climate change adaptation

Welcome to the first edition of the AdaptNSW newsletter for 2017. We are excited to bring you a full newsletter covering:

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- [Latest Building Resilience to Climate Change grant winners](#)
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Saving Our Species future-proofing against climate change

The team at the Office of Environment and Heritage's (OEH's) flagship Saving Our Species (SoS) program has been closely collaborating with Macquarie University and colleagues in OEH Science Division to ensure its ongoing conservation projects address climate change impacts well into the future. The SoS program aims to secure almost 1,000 native species at risk of extinction for the next 100 years.

New climate change research is focused on identifying those species most vulnerable to climate change so specific threats can be classified according to risk and then addressed.

Ecosystems and Threatened Species Senior Project Officer, Dr James Brazill-Boast

says more funding and the appointment of a dedicated Senior Scientist through the SoS Science and Research Plan will help support the survival of native threatened species despite the impacts of climate change.

“New funding and expanding this research means we can address climate change head on – as it is the critical threat to many threatened species.

“Some plants and animals may be more at risk because of rising sea levels, while others may be more susceptible to increasing heat stress. In any case, we can now examine these species in more detail and use distribution models to map areas of suitable habitat under current and future predicted climate conditions. We can then refine our projects accordingly.

“This means we will be better targeting species management priorities to areas that are more likely to ensure the native flora and fauna can flourish for the long-term, despite the impact of climate change,” said Dr Brazill-Boast.

The new position funded under the SoS Science and Research Plan will focus on ensuring that the outcomes of this research will be applied to SoS conservation projects in the most effective way possible.

“A big part of this work is about making sure we are delivering important research outcomes on the ground. The new position will liaise closely with the team at Macquarie University, helping us translate the research out in the field,” Dr Brazill-Boast added.

Once finalised the research: *Assessing the vulnerability of endangered species and ecosystems to climate change in NSW* will be available online. Others will be encouraged to use it to help inform guidelines for reserve acquisition, targeting of species for [Australian PlantBank](#) collections, and adaptation priorities.

You can learn more about ongoing work on biodiversity and climate change issues [here](#).

The SoS program recently received a funding boost of \$100 million to help preserve NSW’s most endangered species. To keep across what’s happening in the program sign up for the newsletter [here](#).

Congratulations to latest [Building Resilience to Climate Change \(BRCC\)](#) grant recipients

The BRCC grant supports local government to address threats and capture opportunities posed by a changing climate. The first two rounds of the grants resulted in 60 councils, seven NSW agencies, four research institutions, three community groups and four businesses working together to deliver 14 adaptation projects across the state.

The round three winners are:

- Cobar Airport Climate Resilient Master Plan, Cobar Shire Council
- Dubbo CBD Heat Island Amelioration, Dubbo Regional Council
- Building adaptive capacity against rising coastal groundwater, Eurobodalla Shire Council
- Building Resilience into Infrastructure Assets, Northern Beaches Council
- Adapting Priority Coastal Recreational Infrastructure for Climate Change, Sydney Coastal Councils Group
- Developing and trialing a Northern Rivers Emerging Vector response Plan, Tweed Shire Council
- Adaptation Action Plans for Priority Infrastructure and Vulnerable Communities, Wagga Wagga City Council

Further information on the grants is available on the [Local Government NSW website](#).



Floodplain wetlands comprised of Phragmites reed beds, water couch grassland and river red gum forest in the northern Macquarie Marshes. Photo credit Tim Ralph

Microbial diversity in the Macquarie Marshes

The Macquarie Marshes is a high conservation value aquatic ecosystem and an internationally recognised area of importance for birds.

A project co-led by Dr Tim Ralph (Senior Lecturer, Dept of Environmental Sciences, Macquarie University) and Dr Yoshi Kobayashi (Senior Research Scientist, OEH) found the spatial distribution of Cyanobacteria and other microbes has a more complex relationship with flooding history, carbon and nutrients than predicted.

Dr Ralph and Dr Kobayashi found the relationship between soil carbon, nitrogen, inundation and microbial diversity differed between key wetland sites, suggesting that the response to changing inundation regimes and climate change may be highly complex and driven by a range of site-specific environmental variables.

“Every wetland may have its own balance of aquatic metabolism and microbial diversity related to site-specific inundation regimes” said Dr Ralph.

Understanding how climate change will impact the relationship between flooding, aquatic metabolism and microbial diversity is critical for ecosystem and water management, but further investigation is required to identify how these variables interact.

The preliminary results of this experiment were presented at the 5th National Cyanobacteria Workshop on 29-30 September 2016 in Brisbane.

This project was funded by the NSW Adaptation Research Hub (Biodiversity Node). For a copy of the final report please contact victoria.graham@mq.edu.au.



The national Australian Farmers for Climate Action survey

Australian Farmers for Climate Action recently ran a nation-wide Farmer Climate Survey in which more than 1,300 farmers from all states and territories took part from industries as diverse as cropping, livestock, dairy and horticulture.

Some of the key findings include 9 in 10 of the farmers surveyed being concerned about damage to the climate. They are experiencing rapid change on their land and in regional weather patterns. Two thirds of those surveyed had observed changes in rainfall patterns during their lifetime and almost one in two reported more frequent or intense droughts, rain events or flooding, and heatwaves.

Looking ahead, a majority of farmers are highly or very concerned about a wide range of impacts including: more unreliable rainfall (76%), higher temperatures (74%), more frequent or intense heatwaves (68%), direct pollution from mining of fossil fuels (68%), increased bushfire risk (57%) and price rises for input costs (53%).

Climate-ready revegetation: A guide for natural resource managers

Climate-ready revegetation: A guide for natural resource managers, provides information on how to use online tools to gauge if existing vegetation (species and local populations) are likely to be suitable as the climate changes.

To make these decisions, information on climate projections for the revegetation site, the climatic tolerance of the existing species (as indicated by species distribution) and the likelihood of survival of local populations are required. The Guide provides step-by-step instructions on how to:

- 1) Find and use online regional climate projections for a local site;
- 2) Evaluate the sustainability of plant species at the site in the future; and
- 3) Consider which strategy for selecting provenances will increase the likelihood of the local population surviving in the future.

These steps are designed to acknowledge uncertainties about the nature and scale of physical change and to develop strategies that are as robust and climate-ready as possible, given our current knowledge base.

The Guide is available at http://anpc.asn.au/resources/climate_ready_revegetation

Workshops are being conducted to demonstrate the applicability of the guide. Please contact [Nola Hancock](#) to register your interest.

Bio Node seminar - 19 April *Identifying species at risk across current and future* *landscapes*

Dr Linda Beaumont of the Department of Biological Sciences, Macquarie University and Bio Node researcher will be presenting the first NSW Adaptation Hub seminar of 2017 on Wednesday 19 April at the Office of Environment and Heritage, 59 Goulburn St, Sydney.

The project, *Identifying species at risk across current and future landscapes* seeks to identify suitable habitat under future climate scenarios for NSW flora and fauna.

Please [rsvp your intention to attend](#) by Tuesday 11 April.



Photos Christina Ting, Tim Stead.

Early Career Research Forum

Early career researchers met in Adelaide from 26-28 September at the 12th Early Career Researcher (ECR) Forum and Workshop held by Climate Adaption Research Hub partner ACCARNSI*. The final day put Adelaide and South Australia's climate adaptation responses to the test with a series of extreme weather events and power outages occurring across the state.

The Early Career Researcher Forum presentations put the wild weather and the need to prioritise climate adaptation responses and emergency preparedness into perspective, with talks focusing on the lessons learnt (and not learnt) from previous extreme weather events, climate adaptation for Australian ports, cross-dependencies within the infrastructure sector, the disconnect between urban development and biodiversity, the achievements of the Peron Naturaliste Partnership, and mapping coastal communities and assets.

Many thanks to the gracious hosts at the University of South Australia, in particular Emeritus Professor Michael Taylor who organised our field trip to the Willunga Basin with Greg Ingleton and Michelle Irvine from SA Water, and a very pleasant afternoon at Coriole Winery where owner Mark Lloyd shared his passion for wine, experimentation and Coriole's ongoing journey to work with a changing climate and towards a fully organic winery. The Early Career Researcher Forum presentations will be available on the ACCARNSI website next month.

The next Early Career Researcher Forum is being held February 2017 in Sydney.

*ACCARNSI: Australian Climate Change Adaption Research Network for Settlements and Infrastructure

AdaptNSW 2016 event wrap up

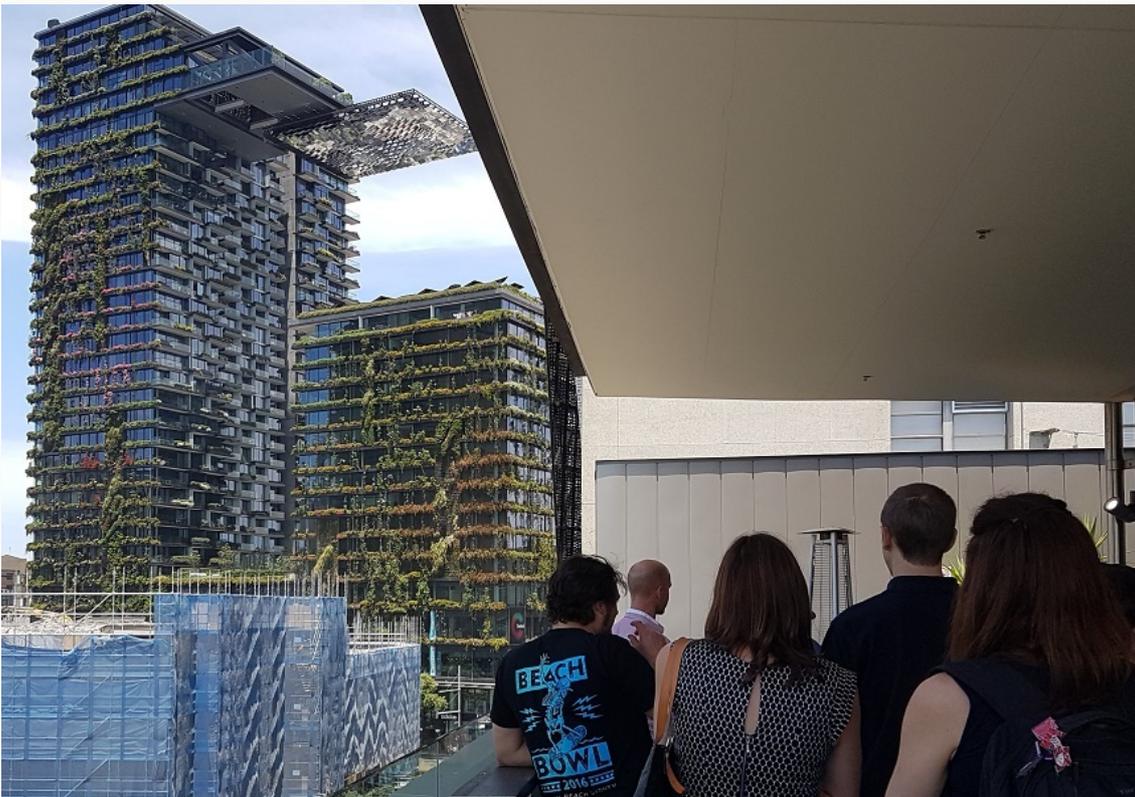
The annual AdaptNSW event was held 2nd December in Sydney. The day brought together 180 stakeholders to hear about the latest in NSW adaptation. Below are some photos from the event. If you'd like more information about any of the projects, please [email us](#).



Presentations through out the day included: NSW Health priorities, Benchmarking government adaptation, National Parks Adaptation Planning and Delivering Adaptation in the West.



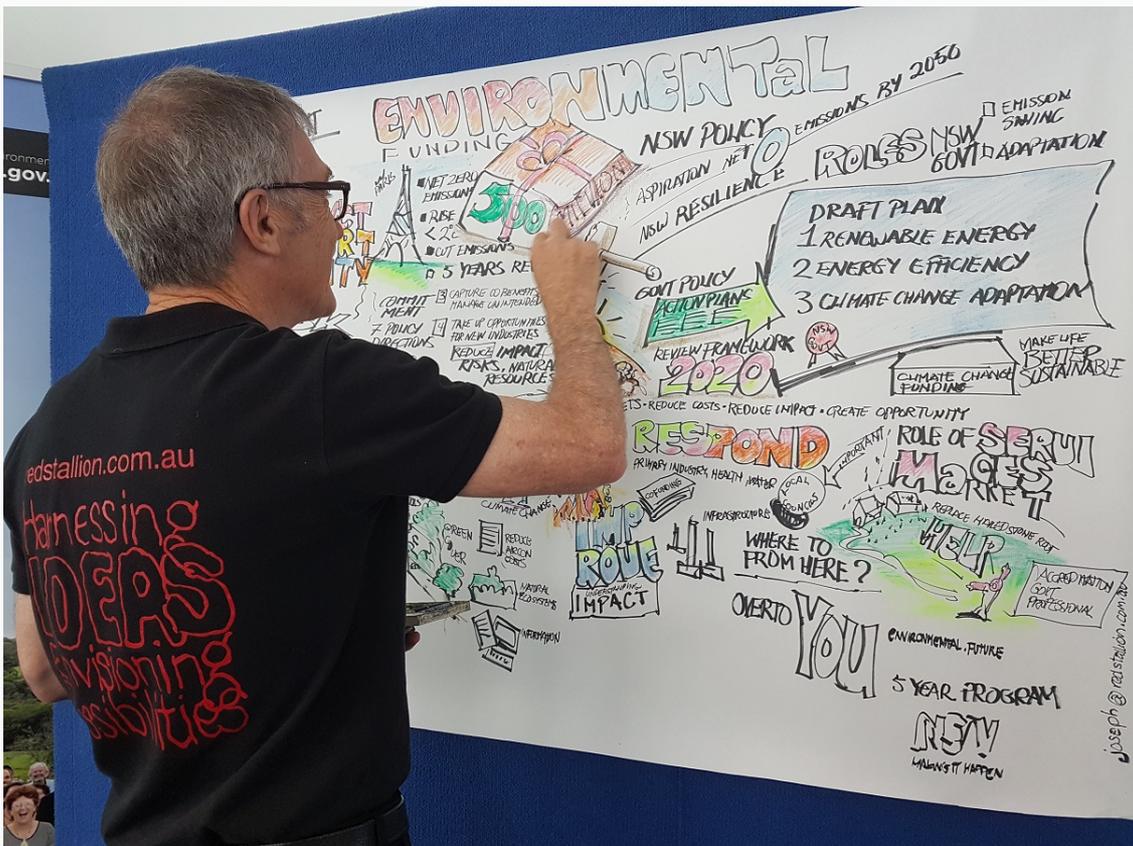
The afternoon included break out sessions covering biodiversity, coastal issues and resilient communities, as well as a panel session on climate innovation.



Jock Gammon from [Junglefy](#) hosted an urban greening tour discussing world leading design such as the One Central Park building.



The Climate Adapted People Shelters design competition finalists were on display – examples of how to design bus shelters to be climate friendly spaces.



Joseph Loewy from Red Stallion provided real time 'graphic recording' of the morning presentations, turning ideas into a visual landscape.



During lunch, participants were able to browse a market place of stalls showcasing research and projects. The Adaptive Communities node showed how virtual reality could help visualise urban hot spots.



The Office of Environment and Heritage Impacts and Adaptation Team:
Melinda Hilary, Suzanne Dunford, Liesl Laker, Malcolm Robertson, Polly Mitchell,
Christopher Lee and Heather Stevens.
Absent: Aaron Coutts-Smith and Storm O'Toole.

Fond farewells...

Vale to both Chris Lee and Heather Stevens who have recently left the Impacts and Adaptation Team at the NSW Office of Environment and Heritage.

Chris is heading up the Australian Climate Knowledge and Innovation Community - [Climate-KIC Australia](#). This new public-private innovation partnership has been established to offer a new way to link businesses, entrepreneurs, research, investors, and government to address the challenges and harness the opportunities of climate change. He has made a huge contribution to climate adaptation research and practice in NSW, and will no doubt continue to drive forward climate adaptation at a national scale.

Heather Stevens has also been chief cat-herder at the NSW Adaptation Research Hub since 2013, and always brought enthusiasm and passion to her many tasks. Heather has decided to commence a PhD at Macquarie University investigating crime rates and climate change.

We wish them both the best of luck in their new endeavours.