

Green infrastructure

Creating green assets — social, economic and ecological benefits of environmental watering

Dr Anne Jensen, Water For Nature Committee, Nature Foundation SA

As we get better at physical delivery of environmental water and selecting best environmental outcomes, the next challenge is to measure social and economic benefits.

Water For Nature, an initiative of Nature Foundation SA, is promoting the concept of 'green assets' created by environmental watering, sustaining ecosystems to underpin healthy rivers which support local communities and economies.

In a precedent-setting partnership with the Commonwealth Environmental Water Holder, Nature Foundation SA is delivering environmental water to sites along the SA River Murray over 5 years (2012–2016). Water For Nature is working with private landholders, irrigators, community groups and local government, delivering water on smaller sites and complementing larger government projects.

Water For Nature delivered 1.1 gigalitres of water in 2014–15 and aims to reach 2.5 gigalitres in 2015–16. Sponsors provided funding for purchase of pumps, irrigation equipment and project manager time, partners have donated equipment and energy to pump water to target sites, while volunteers have often done the manual work of shifting sprinklers and pipes. This combined effort is the basis for realising social and economic benefits from restoring wetland and floodplain assets.

While evidence for these benefits is still largely qualitative, benefits include new partnerships, involvement of irrigator groups, engagement with



Project Manager Craig Ferber, Loxton, Waikerie Deputy Mayor Michael Vowles, SA Water Regional Manager Peter Forward, Loxton Councillor Trevor Norton and Howard Jones of Murray-Darling Wetlands Inc exploring Water for Nature's Loxton Riverfront watering site (© Copyright, Anne Jensen)

local government and schools, and improved health of landscapes and key riverfront visitor locations. Eager new partners include Central Irrigation Trust (joining Renmark Irrigation Trust) which provides expertise and valuable delivery mechanisms through its infrastructure, while gaining an additional customer. The Waikerie and Loxton Men's Sheds have undertaken invaluable equipment servicing and repair, as well as assisting with moving watering systems across target sites.

A special partnership with the District Council of Loxton-Waikerie delivers environmental water via the Council's storage dam into natural floodrunners to freshen floodplain lagoons and water seedlings which germinated in 2012. Extension of watering along riverside walking trails has also brought social and economic benefits to the Loxton Riverfront. Fresh growth on mature trees and thriving seedlings are rejuvenating the riverfront scene for visitors, boaters and locals.

Alongside the social and economic benefits, the big ecological bonus for the Riverland region is the continued survival of healthy black box regeneration

triggered by the 2010–2012 floods, potentially leading to broadscale new recruitment for the first time in 60 years (if they can survive to reproductive age of 20–30 years). A new generation of floodplain plants for the future, including red gums, black box and lignum, will be a priceless asset.

For further information on Water For Nature, please contact Ian Atkinson, CEO of Nature Foundation SA (ian.atkinson@nfsa.org.au) or visit the Nature Foundation SA website naturefoundation.org.au and Water for Nature SA youtube videos [youtube.com/user/NatureFoundationSA1/feed](https://www.youtube.com/user/NatureFoundationSA1/feed)

For further information on the Commonwealth Environmental Water Holder, please contact our Local Engagement Officer based in Berri (South Australia), Michelle Campbell (08 8595 2120; Michelle.Campbell@environment.gov.au) or visit the Commonwealth Environmental Water Office's website: environment.gov.au/water/cewo/wetlands



Inaugural Water for Nature champions Steve Clark, Jason Size and Peter Forward (© Copyright, Anne Jensen)



Green growth tips responding to environmental water in a miniature forest of healthy black box (Eucalyptus largiflorens) seedlings at Thiele Flat, Loxton, in the SA Riverland (© Copyright, Anne Jensen)

Constructed wetlands for wastewater treatment and community benefits

Stefanie Stanley, Ecoteam

Constructed wetlands provide numerous community benefits in addition to wastewater treatment outcomes.



Dr Keith Bolton showing wastewater before treatment (left) and after treatment (right) in the constructed wetland at Malabugilmah Village (© Copyright, Bil Bolton)

Sustainable solutions for wastewater treatment have been successfully implemented by Ecoteam in a number of recent projects across regional NSW and in partnership with organisations overseas.

The Orana Haven Wastewater Treatment project was recently implemented near Brewarrina in western NSW. Orana Haven is a drug and alcohol rehabilitation facility for up to 50 people. Poorly treated wastewater was threatening groundwater supplies. Ecoteam designed and constructed a wastewater treatment system and

disinfection system. The treated wastewater is now irrigated onto Orana's fruit orchard and the plants in the wetland cells which create a green space for the community to enjoy. The community benefits of green space and, in particular, the benefits of green space for mental health have been well documented.

Malabugilmah is an Aboriginal community near Tenterfield. When the community contacted us for assistance, the sewage pump systems were failing and raw sewage was flowing directly into the river. The community health impacts were significant. Ecoteam designed and supervised construction of seven gravity-operated wetland clusters which were positioned to maximise their landscape benefits. A football field was built as part of the project and treated wastewater is irrigated onto the field. Fourteen community members were employed and trained during the project. The community no longer experiences gastrointestinal issues and the children can swim in the river without risk to their health.

Ecoteam recently designed a wastewater treatment wetland in partnership with Borneo Orangutan Survival (Australia) and the Samboja Lestari project in East Kalimantan. Orangutans in Borneo are displaced or orphaned by deforestation activities and are brought to the sanctuary for rehabilitation. Some orangutans are affected by tuberculosis and are unable to be released. Constructed wetlands provide treatment which reduces the risk of transmitting tuberculosis to other orangutans and workers and volunteers on site. Our services were provided on a pro bono basis as we believe in sharing our knowledge with communities in our region. For more details on the Samboja Lestari project, see orangutans.com.au

Rather than creating environmental problems by discharging poorly treated sewage effluent into rivers and oceans, wastewater can be utilised as a community resource. At the same time, community health issues can be resolved and community benefits such as green spaces can be created in addition to the primary aim of wastewater treatment.

For more information about these projects, please visit ecoteam.com.au/projects

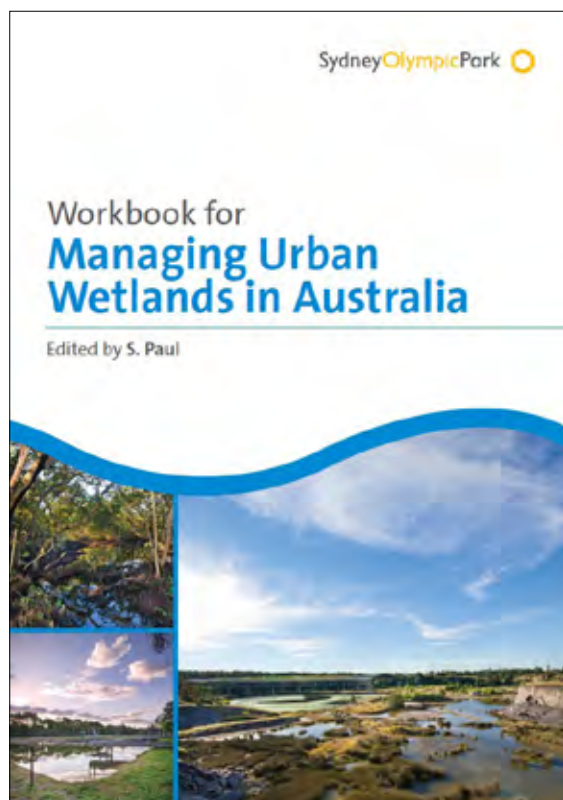


Malabugilmah Wetland Treatment Cells with the irrigated sports field in the background (© Copyright, Bil Bolton)

Insights from the use of an online wetland management resource

Cameron E Webb, University of Sydney and NSW Health Pathology, and Swapan Paul, Sydney Olympic Park Authority

What insights can be provided by analysing information on the patterns of access to a free online wetlands management resource?



Managing urban wetlands is a concern for local authorities throughout Australia. This is particularly the case within urban areas where wetlands provide an important ecological resource but are also under threat from pollution, urbanisation and a changing climate.

In November 2013, the Sydney Olympic Park Authority launched a free online eBook, 'Workbook for Managing Urban Wetlands in Australia'. This resource draws on the experience of developing and delivering the Wetland Education and Training (WET) Program at Sydney Olympic Park over a period of 12 years. The eBook has 28 chapters written by eminent wetland scientists, practising ecologists and other dedicated professionals.

Data on the downloads of each individual chapter of the eBook were analysed. A total of 6451 chapter downloads took place over the 22 months since publication. Nearly half of these downloads took place within the first six months of publication, with up to 1200 in March 2014, but the resource is consistently accessed with approximately 280 chapter downloads each month. The introductory chapter, outlining the importance of urban wetlands, was downloaded the most (541 downloads). Of the other individual chapters, those dealing with biological assessments of wetlands (227 downloads), water quality testing (246 downloads) and guidelines for management plan development (210 downloads) were most popular.

We feel this reflects the demand for practical advice on managing wetlands. The remaining chapters, many with highly specific topics, have been downloaded between 141 and 224 times.

While the eBook was originally targeted at wetland professionals, feedback indicates it has been used as a preferred text book by Australian universities teaching wetland ecology and management. In addition, community groups have benefitted from access to a freely available resource containing a level of detailed information otherwise not easily obtained.

Enjoy reading this eBook and making a difference in the wetland that you care for. Also, please encourage your peers to access this eBook and make use of it.

The eBook can be accessed for free via the website of the Sydney Olympic Park Authority: sopa.nsw.gov.au/resource_centre/wet_ebook_workbook_for_managing_urban_wetlands_in_australia

For more information on the eBook, as well as the Sydney Olympic Park Authority's Wetland Education and Training Program, please contact Dr Swapan Paul at Swapan.Paul@sopa.nsw.gov.au