Water for Nature Environmental Watering
Site Monitoring Report

by Dr Anne Jensen

Calperum Floodplain, South Australian Riverland

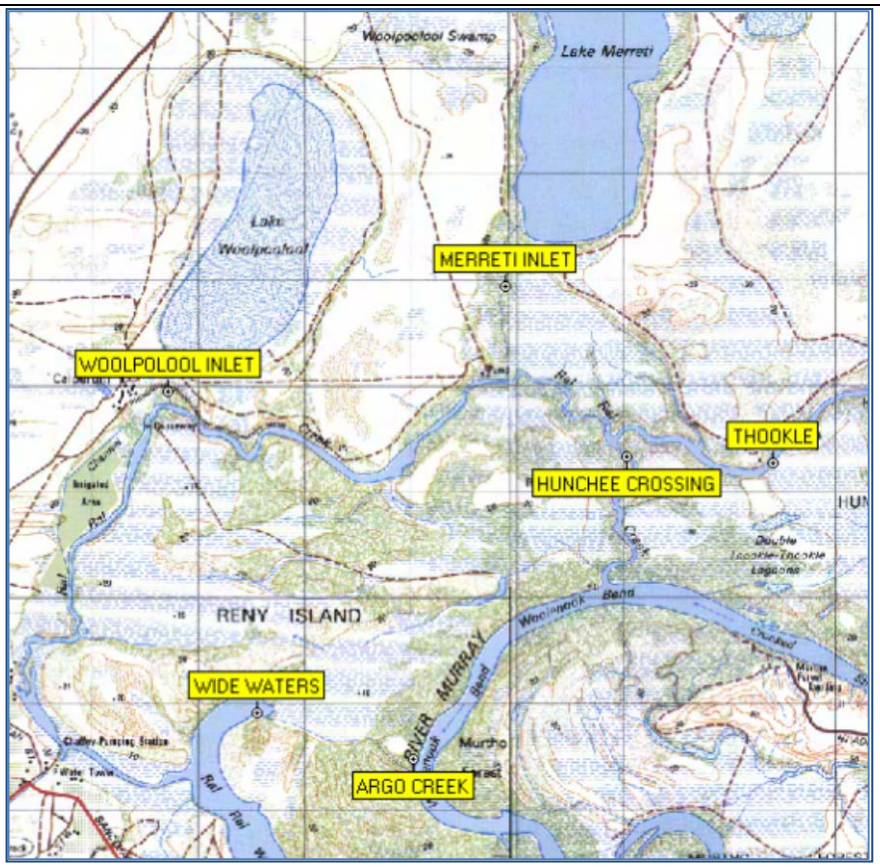
July 2013 to June 2016

Nature Foundation SA is a not-for-profit nature charity that works to Save, Protect and Restore South Australia's natural biodiversity. Since 2008 one of our flagship programs, Water for Nature, has been delivering environmental water along the Murray River to help reduce the loss and stress to ecosystems and habitats caused by river regulation and drought.

Over the last three years, our Water for Nature program has worked with 200 volunteers to deliver 4.56 gigalitres of environmental water to more than 35 wetland and floodplain sites along the Murray River.

Healthy wetland and floodplain environments are important for environmental, economic, cultural and social reasons, providing an optimal environment for flora and fauna, improved water quality for human consumption and agricultural use, and opportunities for recreation and tourism.

We work with private landholders, irrigators, community groups & local government on smaller sites to deliver environmental water, complementing larger government watering projects. Nature Foundation SA also works closely with the Commonwealth Environmental Water Holder to deliver environmental water.

Water For Nature Environmental Watering Site Monitoring Report	
Site name	Calperum Floodplain, South Australian Riverland
Report period	July 2013 to June 2016
Date prepared	July 2016
Location	 Calperum Station lies along the Old Wentworth Road and covers the western half of the Chowilla Floodplain on the River Murray, approximately 25 km north of Renmark and downstream of Weir & Lock No 6. It includes a complex of temporary lakes, wetlands, billabongs, swamps and backwaters, and is adjacent to the Murray River National Park (Chowilla Regional Reserve and Bulyong Island). It includes 9000 ha along the Ral Ral anabranch within the Riverland Ramsar Site, a wetland complex of international importance stretching from Renmark to the SA border.
Contact Name	NFSA Water for Nature Program Manager Natalie Stalenberg Australian Landscape Trust: Dr Peter Cale
Water Provider	Commonwealth Environmental Water Holder allocation to NFSA
Partners	Australian Landscape Trust staff and volunteers
Aim of watering project	Maintain tree health and/or support restoration through occasional watering of floodplains, small inlets and depressions immediately adjacent to waterways that have been droughted due to river regulation and suppression of natural water level variations. Particular targets are the red gum and black box seedlings that germinated after the 2011-2012 flood events.
Planning Context	Management Plan for the Riverland Ramsar Site: Plan for Use 2010-2015

Key objectives	Environmental watering at these sites have the following objectives: 1. improve soil moisture levels to enhance understorey cover and to provide optimum conditions for the improved health and survival of mature trees, seedlings and saplings 2. extend temporary feeding habitat for water birds and so increase the abundance and diversity of water birds 3. improve water availability and quality in each wetland.
Site Description	Temporary wetlands, disconnected ephemeral wetlands, small inlets and depressions immediately adjacent to waterways, scattered across a broad floodplain complex and adding to biodiversity and habitat variety
Watering History 2013-16	Watering commenced in October 2014, with the aim of delivering 570 ML to 10 wetland sites by 2017. Sites watered in 2014-15 were Woolpolool Inlet, Hunchee Crossing and Thookle Thookle initially, followed by Argo Creek and Wide Waters, with a total of 277 ML delivered. In 2015-16, Merreti East floodplain and Amazon Floodplain were watered, and Thookle Thookle was topped up, with 800 ML delivered. This was a total of 1077 ML delivered to 7 sites by 2016, already exceeding the volume target one year early.
Habitat	Open floodplain habitat with scattered wetland habitats and red sand dunes, including open red gum woodland, red gum seedlings, open black box woodland, black box seedlings, and lignum and chenopod shrubland; temporary wetland habitat with food sources for waterbirds
Water Source	NFSA allocation from Commonwealth environmental water 2013-2016; delivered by Australian Landscape Trust – operation of pumps and monitoring program
Event details	*2013-14* project not commenced
	2014-15 initial fill of Woolpolool Inlet, Hunchee Crossing, and Thookle Thookle in late 2014, completed initial fill of remaining sites Argo Creek and Wide Waters in early 2015 277 ML delivered
	2015-16 Merreti East floodplain, Amazon floodplain and Thookle Thookle, 800 ML delivered
	Maximum area inundated (ha) Estimated area 361 ha
	Duration of the environmental watering project (2013-16) Watering commenced in October 2014 and has continued over 2 years at a total of 7 sites.

Annual Observations against key objectives (*including species of conservation significance (state or Commonwealth listed threatened species, or listed migratory species) observed at the site, any breeding of frogs, birds or other prominent species observed at the site and details of any observable responses in vegetation, such as improved vigour or significant new growth)*	2013-14 Project not commenced
	2014-15 (observations by Australian Landscape Trust) The overall monitoring program at Calperum Station includes event-driven surface water testing of the major waterways, tree health monitoring of permanently marked red gum and black box trees across parts of the floodplain, and waterbird surveys for the two major Lakes Merreti and Woolpolool. Photopoints were established at each watering site from commencement, and surveys of tree health, waterbirds, frogs, vegetation and opportunistic plant collections undertaken later at selected sites.
	2015-16 (observations by Australian Landscape Trust) Waterbird surveys were undertaken at Merreti East floodplain, Thookle Thookle and Reny Island Lagoon. A total of 40 species of waterbird were recorded on the three wetlands surveyed, including waders such as the Pectoral Sandpiper, Wood Sandpiper, Red-necked Stint, Greenshank and the common Black-winged Silt. The peak in waterbird numbers was at Merreti East floodplain when more than 800 individuals from 27 species were recorded in April 2016. In addition, at least four species bred on the wetlands. A survey of frogs on Thookle Thookle was conducted when an annual survey of the major Lakes Merreti and Woolpolool was completed. Four species of frog were recorded compared to six species for Lake Merreti and seven species for Lake Woolpolool. In the Tree Health Assessment, a total of 1,110 trees were surveyed around the Merreti East floodplain site (Figure 1). Of the total, 15% of trees were long dead, 5% of trees apparently died recently, 19% of trees were alive, but in a state of stress, while 61% of trees were in good to very good condition. Opportunistic Plant Collections at Woolpolool Inlet and Thookle Thookle wetland areas found populations of four State threatened plant species. The endangered Black Cotton-bush (*Maireana decalvans)*, the rare species Slender Carpet-weed (*Glinus oppositifolius)*, Small Monkey-flower (*Mimulus prostratus),* and Lagoon Spurge (*Phyllanthus lacunarius)*. After a taxonomic review Lagoon Spurge is now only known from two locations in South Australia.
Future Watering	Continue late spring-early summer fillings 3 years in 5, taking into account any natural floods or extended drought periods; red gum likely to be watered by high flows in September -- December 2016 Expand watering to additional sites in Calperum Floodplain complex in 2016-17 water year

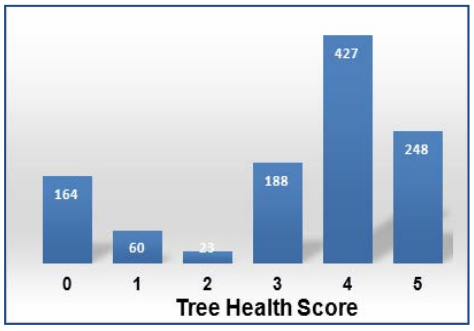


Figure 1 Results of tree health assessment on Merreti East floodplain

Calperum Wetlands Locations, Volumes and Areas

Name	East	North	Mean Depth (m)	Area Ha	Max. Fill Volume ML
Woolpolool Inlet*	473836.03	6233118.07	0.3	6.0	**24.0**
Thookle*	479543.84	6232441.29	0.7	10.0	**44.5**
Merreti North - Woolpolool Swamp	476882.94	6237990.18	0.2	56.0	**112.0**
Merreti Inlet*	477019.25	6234105.49	0.3	20.0	**40.0**
Hunchee Crossing*	478159.63	6232496.26	0.3	0.8	**2.4**
Murray/Amazon	483592.57	6232967.37	0.3	3.3	**9.9**
Wide Water*	474677.60	6230079.16	0.4	2.4	**9.6**
Murray/Reny	476992.34	6230897.96	0.3	16.0	**48.0**
Horseshoe 1	482286.21	6230999.75	0.3	6.5	**19.5**
Murray 1	479710.82	6230819.37	0.3	6.1	**18.3**
Horseshoe 2	480668.22	6230292.54	0.5	8.8	**44.0**
Merreti/Clover	477998.15	6238155.61	0.4	140.0	**560.0**
Argo Creek*	476153.00	622955.00	5.0	1.3	**62.5**
TOTAL				277	**994.7**

Hunchee crossing before watering December 2014 (Photos: ALT)

Hunchee Crossing after watering, January 2015