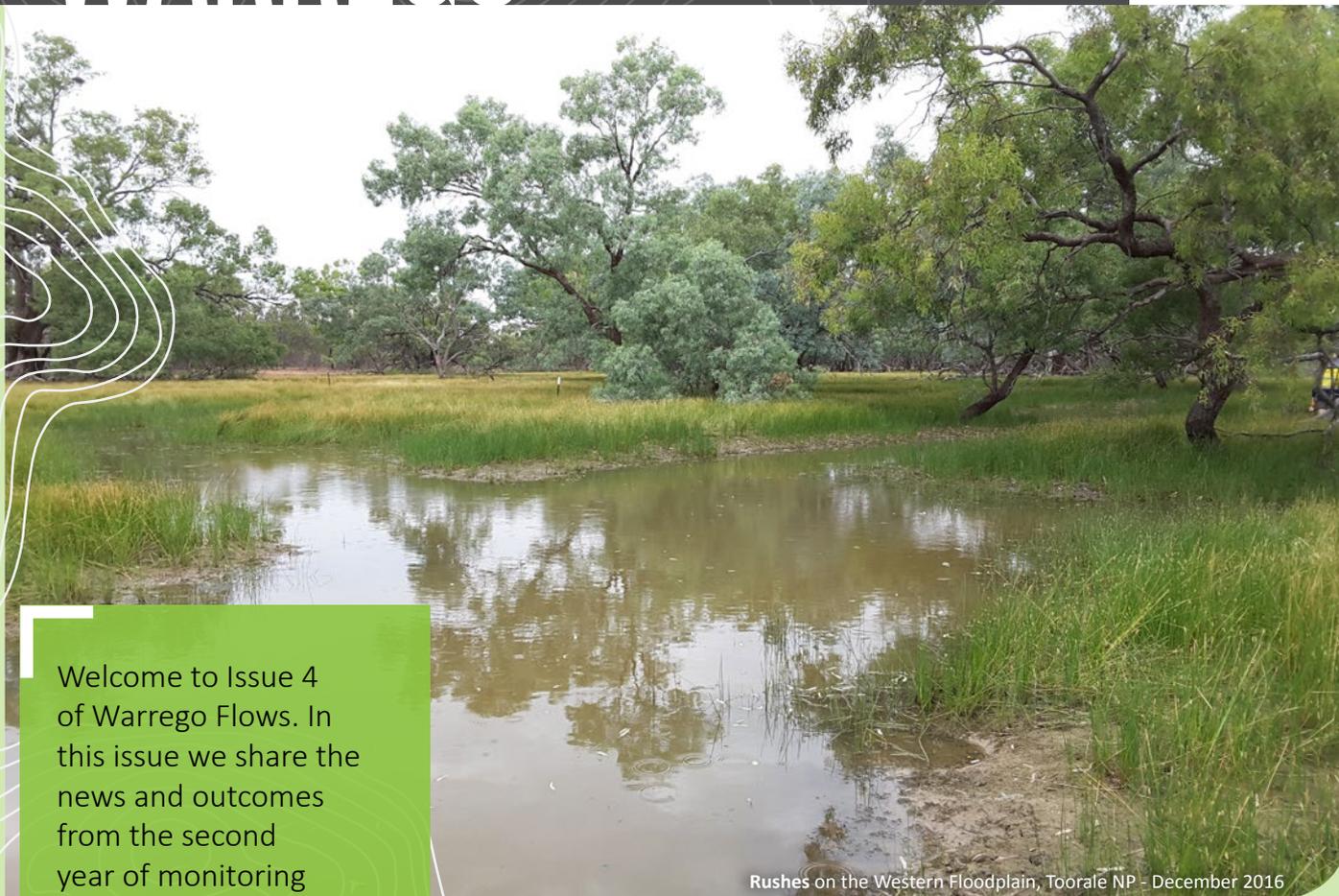


# WARREGO FLOWS



Rushes on the Western Floodplain, Toorale NP - December 2016

Welcome to Issue 4 of Warrego Flows. In this issue we share the news and outcomes from the second year of monitoring environmental watering at Toorale National Park in the Warrego-Darling river system as part of the Commonwealth Environmental Water Office's Long Term Intervention Monitoring (LTIM) Project.

The Warrego Flows is a newsletter that seeks to keep you up to date with the work we are doing to monitor the outcomes of environmental water management in the Warrego-Darling.

## Environmental Flows

Water is essential for the ecological function and general health of a river system, and is also important for the maintenance of stream channels and sediment loads. For the 2015/16 period, Commonwealth water contributed to four separate instream flow events in the Barwon-Darling River. The inflow event from January – March 2016 provided a total 22,100 ML of water to the downstream area of Louth, 30% of which was made up of Commonwealth water.

To help meet the Warrego-Darling system's water needs, the Commonwealth Environmental Water Holder and NSW Office of Environment and Heritage have implemented a strategy to deliver Commonwealth environmental water at Toorale. As a result of upstream rainfall in the Warrego catchment during February/March 2016, and in accordance with Toorale licence conditions, the Boera Dam gates were opened four times, allowing full connection of the lower Warrego channel and connection into the Darling River during this period.



Brolga on the Western Floodplain



Neobatrachus sudellae (Sudell's frog) Boera Dam

## Water Quality

In-channel flow pulses in the Darling River dispersed the floating aquatic plant Azolla that had completely covered the water surface in spring. These flows reduced the risk of ecological problems such as hypoxia (black water), which creates an oxygen depleted environment and can be deadly to organisms living in the river. Increased levels of primary production during flow events were linked to increased light penetration because of clearer water.

## Ecosystem functioning

In-channel flow pulses increased access to habitat for fish and other aquatic animals in the Darling River. These flow events also allowed for the exchange of organic matter and nutrients between the river channel and riparian areas. Localized rainfall on the Western Floodplain also generated flows that inundated 464 ha of land, watering Lignum shrubland and Coolibah open woodland wetland communities.

## Biodiversity

Flows in the Warrego River and inundation of the Western Floodplain at Toorale NP (as a result of above average rainfall) promoted frog, fish and invertebrate communities. Flow connection stimulated breeding and recruitment in several native species, including golden perch.

## Resilience

Commonwealth environmental water contributed to flows in the Warrego and Darling Rivers which reconnected previously isolated refuge pools and maintained water quality within levels suitable for aquatic life. Though no Commonwealth environmental water flowed onto the Western Floodplain in 2015-16, vegetation communities responded positively to above average rainfall during the year, and waterhole sites contained a high abundance of frog and macroinvertebrate species.



Hyrtles catfish (Gavin Butler)



Warrego Yabby

## WHAT'S NEXT?

The second year of monitoring in the Warrego-Darling system provided evidence of the continued effectiveness of the environmental watering strategy. Though Commonwealth water only made up a small proportion of the water that flowed through the site in 2015/16, the additional flow increased both longitudinal and lateral connectivity and helped to maintain water quality throughout the system.

In 2015/16, the Western Floodplain was shown to provide quality habitat for invertebrates and frogs, with high biodiversity and abundance of both recorded on the floodplains. Wetter conditions later in 2016 resulted in a series of flows in the Warrego system enabling Commonwealth environmental water to be directed to the Western Floodplain between July and September. This provided the broadest scale inundation of the lower and middle sections of the floodplain since 2012. We will continue to monitor the environmental outcomes of these environmental flows for the Warrego-Darling system. Don't forget to look out for our findings in upcoming newsletters.



Major Mitchell Cockatoo - Toorale National Park



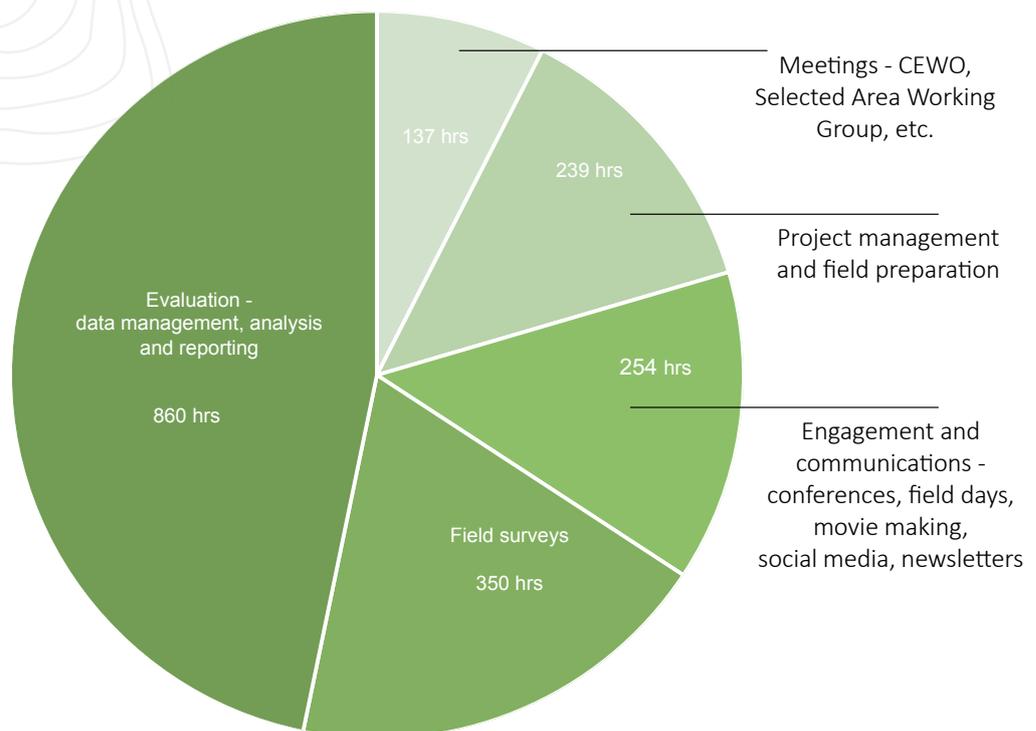
## Time invested

Ever wondered how much time goes into this project? Last year it was over 1,800 hrs and this doesn't include the substantial amount of time contributed by DPI Fisheries and Dr Darren Ryder's team at The University of New England (UNE).

The team skill set comprises of:

- Botany
- Fauna ecology
- Aquatic ecology
- Geomorphology
- GIS analysis
- Statistics
- Data management
- Communication
- Project management
- Report writing
- Quality assurance etc.

## HOURS INVESTED IN A YEAR OF MONITORING



## Lindsey Frost

**ECOLOGIST**



### Describe your role:

I am a field ecologist, working with other ecologists doing frog and waterbird surveys in the Warrego-Darling Selected Area. We also help out with water quality and bug sampling with our colleague Iris from UNE who joins us on the trips to Toorale National Park.

### What does a regular day on the LTIM Project look like?

Up early to beat the heat and get to the dams to conduct waterbird surveys and water sampling then home for (hopefully!) a quick rest and some dinner before heading back out to the same places for night time frog surveys. We manage to squeeze in a few photo opportunities on the way, especially on the beautiful Western Floodplain and take the time to note any other fauna of interest as we travel through.

### What's your most memorable LTIM Project moment so far?

Seeing two adult Brologas on our way to

the Western Floodplain, stopping to take some photos and then realizing that they actually had two very young chicks in tow. Special! Or was it the sunset at Boera Dam waiting for full dark to go frogging? Or the canoeing trip on the Western Floodplain in flood paddling against the current in a place that last time I was there I had described as 'crunchy dry'? Or the Fat-Tailed Dunnart on the banks of Booka Dam desperately trying to pretend he wasn't there when we were out on a frog survey? Too many memorable moments to choose from!

### What do you wish other people knew about the LTIM Project?

What an incredible and hugely significant piece of water reform policy this work supports. The field trips are awesome and the work is fun but we should never lose sight of what it is all in aid of - helping to inform the long-term management and recovery of the Murray-Darling Basin. That's something worth getting excited about.

## Adrian Clements

**LOCAL ENGAGEMENT OFFICER**



### Describe your role:

In my role as a Local Engagement Officer (based at Dubbo) for the CEWO, I am responsible for communicating and engaging with local communities, government agencies and stakeholder groups about environmental water delivery in the Warrego and Barwon-Darling river systems. This includes communicating community and stakeholder knowledge, concerns and comments back to the main office in Canberra. This allows for a more informed decision making process. I also do the same for the Macquarie and Namoi river systems.

### What's your most memorable LTIM Project moment so far?

One of my first trips to Toorale where I met the monitoring team. It was great to see their enthusiasm and knowledge of the bugs, frogs, birds and vegetation of the area. I also remember this trip because I missed out on seeing a pair of Brologas by half a day. I haven't seen a Brologa in the wild yet, maybe next trip...

### What do you wish other people knew about the LTIM Project?

The value of long term monitoring in furthering our understanding of Australia's water dependent ecosystems. Without it, it would be difficult to know exactly what we are doing right or wrong in the way of environmental water delivery on a long-term scale.



Department of Primary Industries



Commonwealth Environmental Water Office