The background of the slide features a landscape of Uluru (Ayers Rock) in Australia, with its iconic red rock formations under a blue sky with scattered white clouds. In the foreground, there is a field of dry, golden-brown grass. Overlaid on the left side of the image are several large, white, semi-transparent water droplets of varying sizes, some overlapping each other and the landscape. The text is positioned on the right side of the slide.

Kamilaroi (Indigenous) Knowledge and Methodologies to Inform Water Management

TE AWA O WAIKATO 2023

Ass/Pro Bradley Moggridge



**UNIVERSITY OF
CANBERRA**

CENTRE FOR APPLIED
WATER SCIENCE

I am Kamilaroi

**Yaama (a greeting, seeking - what is your intention?)
I acknowledge the Waikato Tainui and their Country.**



Been here before



Off the bench 2016



2016

Phil Duncan.
is a Gairrath man from Murrumbidgee. He has provided high-level policy and strategic advice as a former Chairperson of the First Peoples Water Engagement Council with key Indigenous Tribal River representative organisations to State and Federal Governments as well as key sectoral stakeholder groups. Phil has more than 28 years of experience working with Aboriginal people, communities and helping with Government's.

Brad Moggridge.
is a Murrumbidgee man from the Kamarranji (Ibe) north-west of NSW and hydrologist with a passion for integrating Aboriginal ecological knowledge. Born in Wollstone Sydney, Brad studied hydrogeology at the University of Technology and then went on to study environmental science at Adelaide. Brad has now begun a PhD at the University of Canberra and is also a part-time Indigenous Liaison Officer for Threatened Species Recovery Hub. Brad travels to international conferences to present Aboriginal water governance issues along the Murray-Darling River.

2019

Thank you:
Lorraine
Tim
Erina
Charlie
Deniz
Siobhan
WRA and WU



2019



2017



2023

Time for a good old fashioned Trans-Tasman bomb-off



Australia seems to only respond to a CRISIS

- 1000km of blue green algae (NWI and Reform)
- Mega drought after the Millennium drought (#Normal)
- Species extinction (Prof. Samuels EPBC Act Review 2020)
- 2018/19 Rivers drying up and Millions of dead fish (NFRS)
- 2022 Millions of dead fish 2.0 in the Baaka
- 2019/20 Devastating fires, 2023 fires have already started
- 2022 Floods (2 x 1in500yr) in a matter of months
- 2020 Australia was too late to stop the destruction of Juuken Gorge



Cultural Value of Water

Water is protected by Lore, it's in the songs, dances, Dreaming stories and art.

Traditional Water Knowledge and Science:

- Acknowledge our diversity
- How our old people knew water - reconnect
- Tell our stories our way about water
- Indigenous Research Methodologies
- Rights and Values of water, *decolonise water*
- Culturally validate our knowledge




Policy and Rights Setting

What does history tell me? We are on and have survived the driest inhabited continent on earth, but:

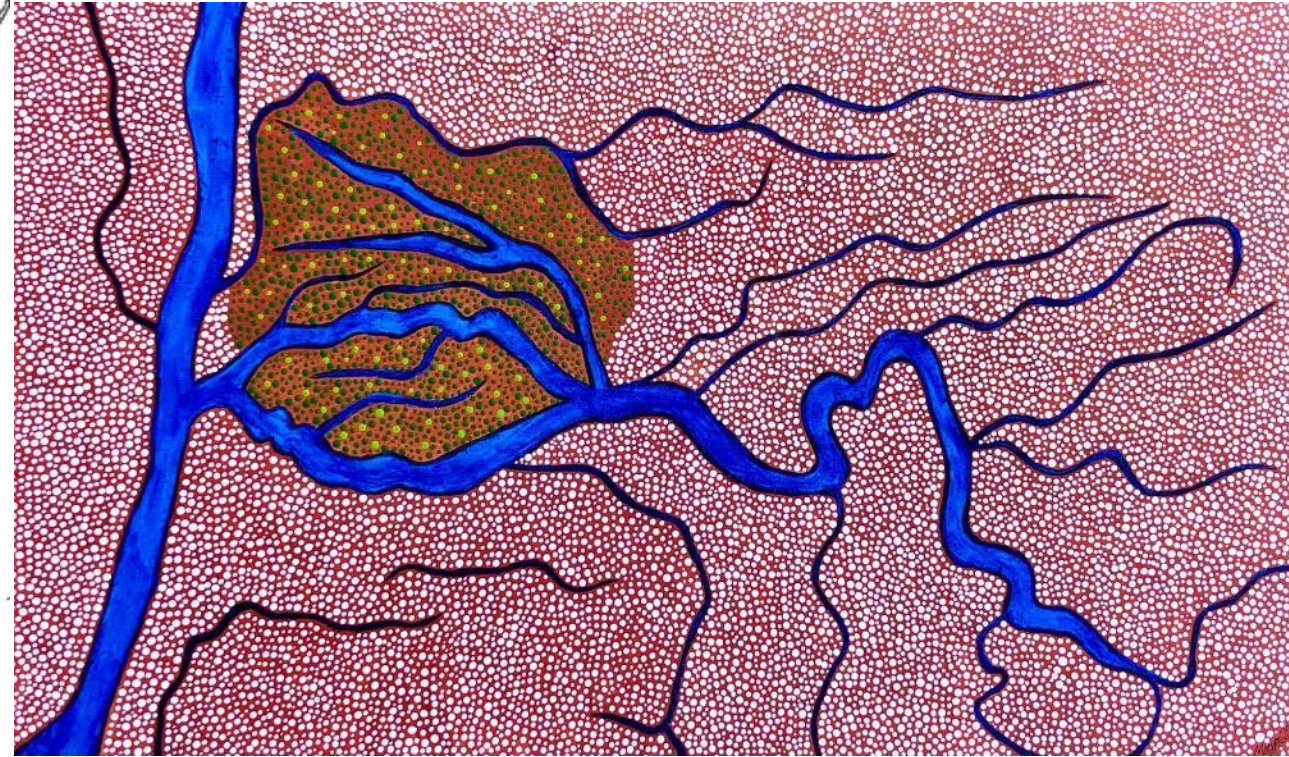
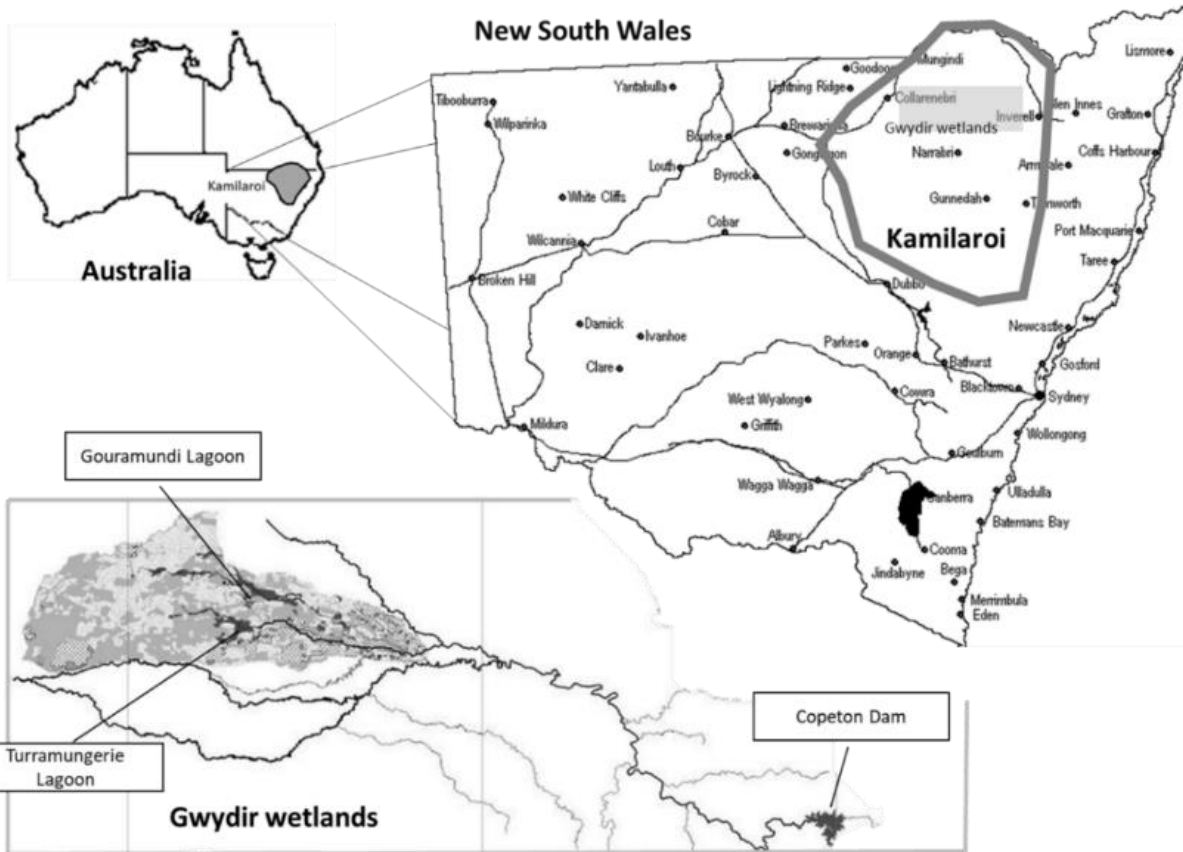
- **No Voice, Treaty or Truth = No *Veto***
- **Our land and water was given away, our waters are modified, diverted, harvested, over-extracted and polluted**
- **Our people were not counted as humans till late 1960's**
- **Review after review telling us what we don't have (NWC, PC, Senate)**
- **When we became human all good land or water was gone**
- **Water and land was decoupled in early 2000's**
- **So, if we want water, we have to buy it (win win for the settler)**



A close-up photograph of a campfire burning brightly in a dark, outdoor setting. The fire is contained within a circular pit made of stones and is fueled by several logs. The flames are bright yellow and orange, contrasting sharply with the dark background. In the background, a large, smooth, reddish-brown log lies horizontally. The ground around the fire is dark and appears to be dirt or sand.

AIM: To test a process
which engages
Indigenous people in
spirit of co-design and
co-management of
river flows and
wetlands

Case Study Location



Case Study Location

- The **Gwydir Wetlands State Conservation Area** was created by the NSW Government in February 2011 and covers an area of 9712.78 hectares (**9.7% in public hands (National Parks)**).
- This is **smaller than the original extent of the wetlands** (more than 100,000 hectares) as many parts of the wetlands have been reclaimed (stolen twice) and levelled for you know what.
- Other wetland areas are **on private land**
- So, Kamilaroi are yet to get the keys to their Country after being **locked out for 160+years**

Wiraarr



Dhinawaan



Galibaay



Yirrin

Methods

- **Kamilaroi people engaged on-Country** (under Ethics Approval HREC 17-256) face to face was essential.
 - A **generic set survey questions** were used, on-Country around **the sacred fire** (some yarns drifted off to amazing places not available, sorry)
- ... all while having to deal with the **end of the COVID pandemic** and then ***La Nina*** kicked in (limiting access to people and Country).



Outcomes

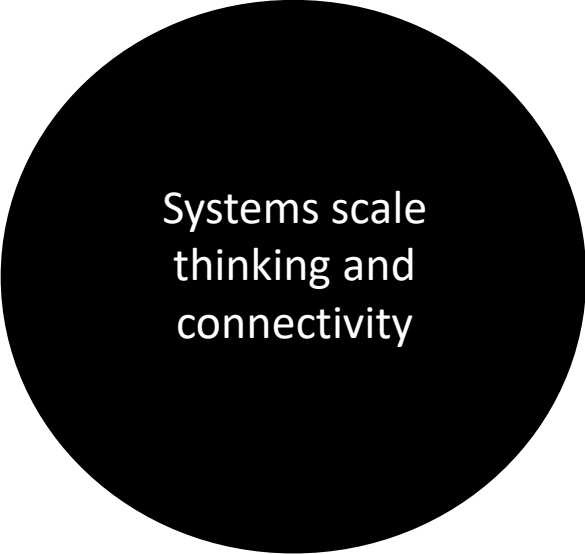
Systems scale
thinking and
connectivity

Species, Seasonal
markers and cultural
harvest

Long knowledge
(millennia)

Exclusion from water
markets and
management processes
by complexities of
governance





Systems scale
thinking and
connectivity

- Strong belief in the **interconnectedness of the biophysical and spiritual worlds**
- A genuine reluctance to engage with processes which did not recognise the **interconnectedness** of systems e.g. groundwater and surface water management
- **Responded positively to social-ecological and ecosystem thinking**, negatively to reductionist and habitat specific approaches
- **Climate has changed and is impacting our Country**



C

S



Wetland
Dec 2020

Systems scale
thinking and
connectivity

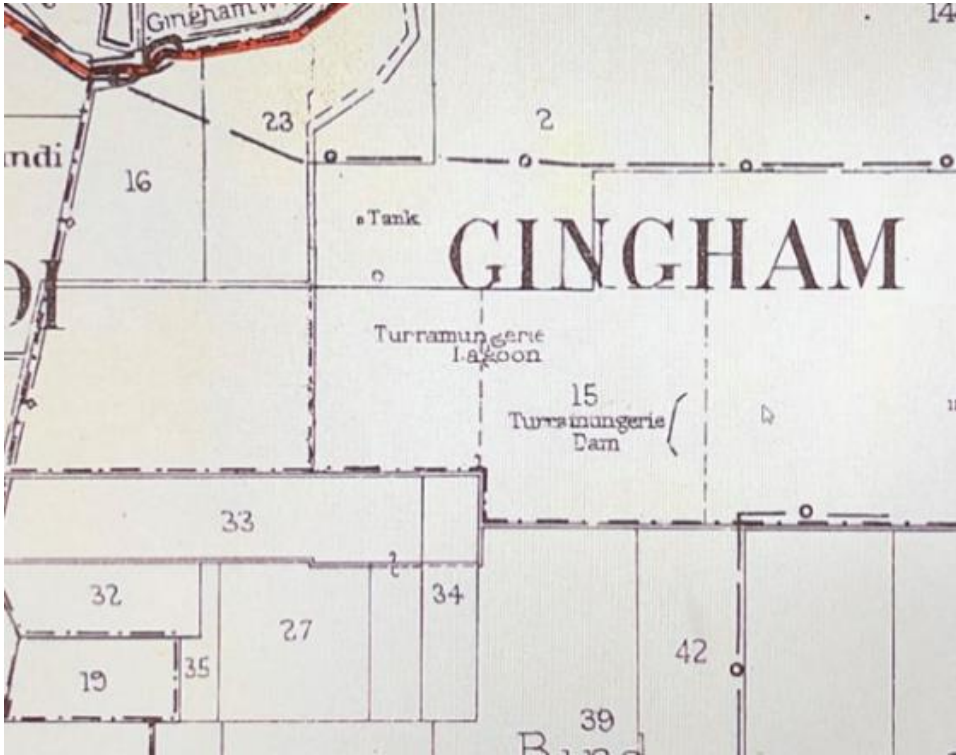
- A site in the Gwydir complex was identified as a **site with cultural values, cultural indicators as well and non-Indigenous values** (aesthetics and ducks).
- A large lagoon (calling it **Turramungerie**) **needs regular watering**, next to the red sand ridge containing:
 - significant cultural plant/food species (maybe translocated),
 - A remaining large scarred tree and
 - even a koala scat.

Guda Goona - Koala scat



Red R





Turrangerie Lagoon referenced on County of Benarba - Gingham Parish HLRV map dated 29/9/1950 <https://hlrv.nswlrs.com.au/>

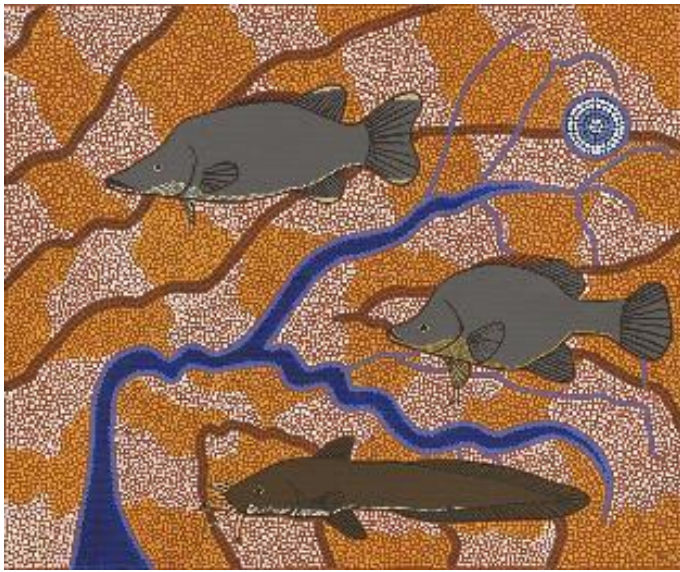




Turramungerie Lagoon very dry – in 2018



Turramungerie Lagoon very wet - La Nina in 2022




ART: Brad Moggridge



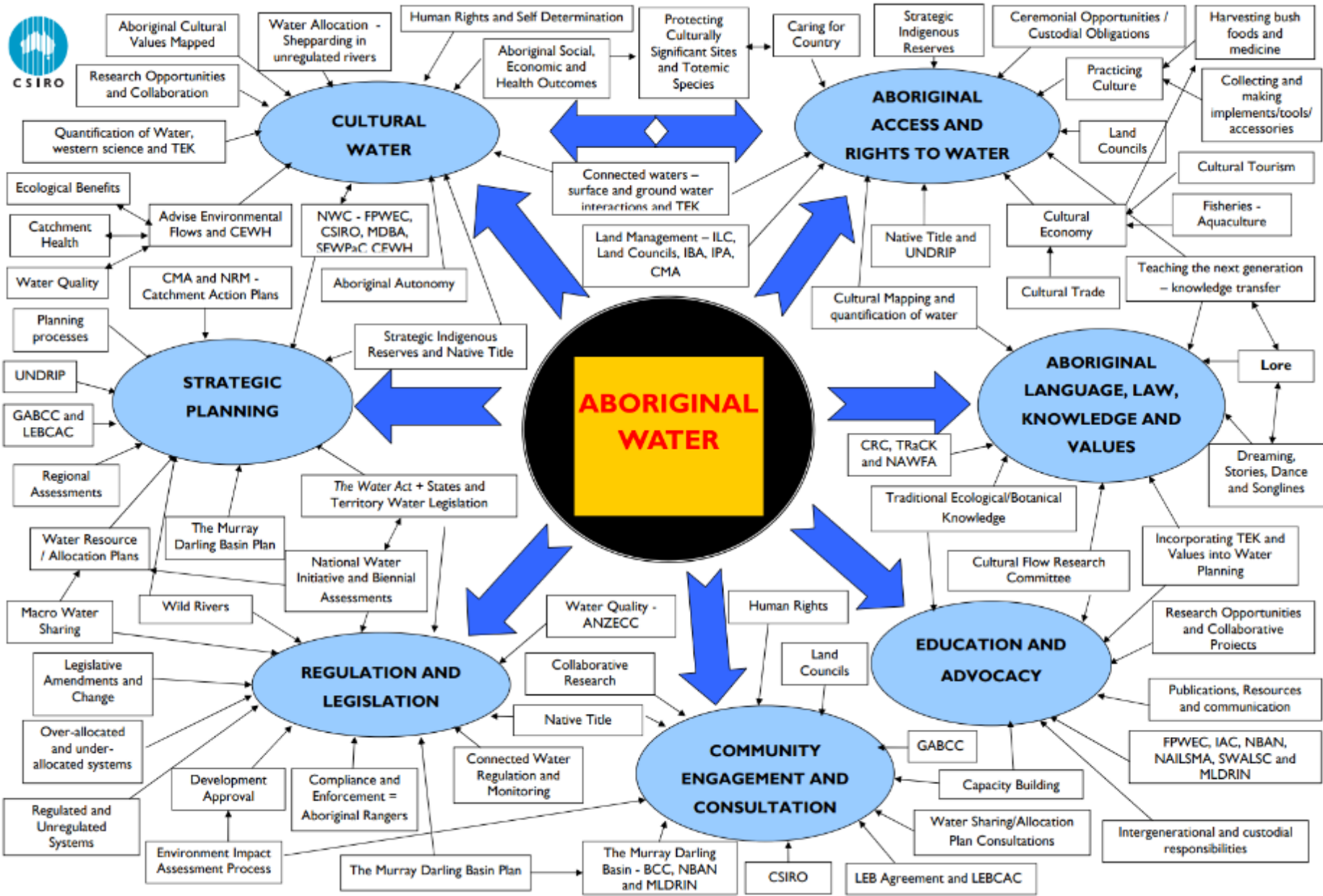
We Risk: Loss of
species and
knowledge of seasonal
markers and cultural
harvest and flow cues



- **‘Water literacy’** is a significant barrier to participation in natural resource management
- **Cultural barriers for younger Kamilaroi people**
- **A lack of appropriate mechanisms for knowledge exchange and information to support engagement**
- **Almost zero water entitlements**



Exclusion from water management processes by complexities of governance



Exclusion from water management processes by complexities of governance

Water management in the Gwydir

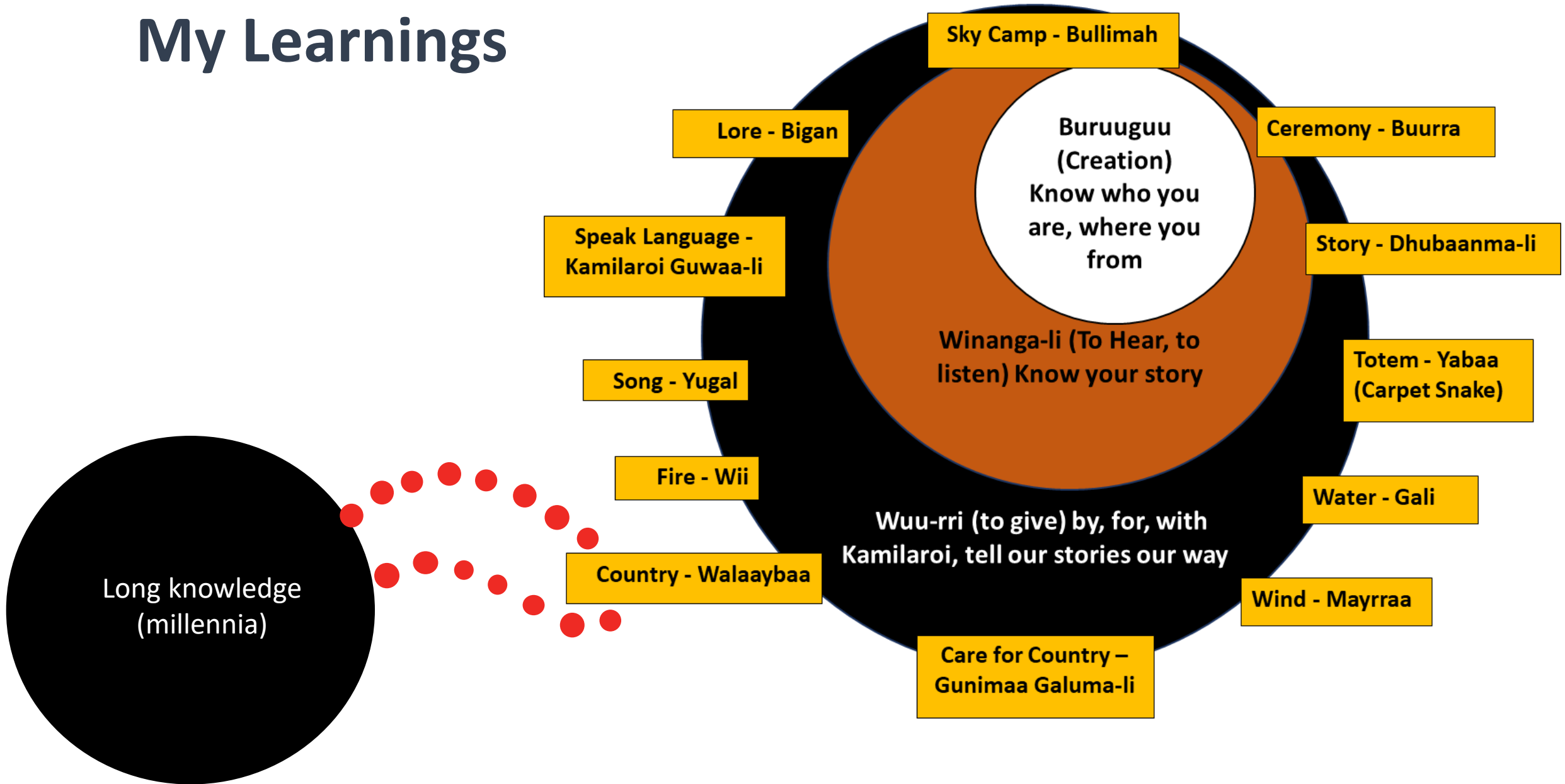
- There is **environmental contingency allowance (ECA)** available in the Gwydir water sharing plan, could be accessed for cultural and ecological outcomes.
- Cultural knowledge linked to values and sites identified water landscapes that **in the past received regular water and now don't**
- Constraints on this flat country, – lack of **Aboriginal advice, diversions via earth mounds, over extraction** upstream and **harvesting the water on the floodplain.**

Water management in the Gwydir

Constraints



My Learnings



FROM: 2023 Moggridge, B. and Thompson, R.M., Indigenous engagement to support resilience: a case study from Kamilaroi Country (NSW, Australia). Chapter 18 in Thoms, M. and Fuller, I (eds). Resilience and Riverine Landscapes. Elsevier.

Conclusions

- Water management in Australia **has to date failed to effectively engage Indigenous perspectives**, and there is an urgent need to move from a consultation model to co-design and co-implementation.
- **Indigenous perspectives can be gathered** and how that knowledge can be used to generate management-relevant information.



Conclusions

- Engagement is possible in two ways:
 1. Through **building policy which is equitable and inclusive**, and therefore more likely to be sustainable and resilient.
 2. Through **incorporating Indigenous long-term knowledge into systems science**, undertaking a **Cultural heritage study**, enabling a better understanding of **how everything connects** through time.
- **Indigenous engagement is both an equitable outcome, and of benefit to the broader effort to better manage ecosystems for resilience.**



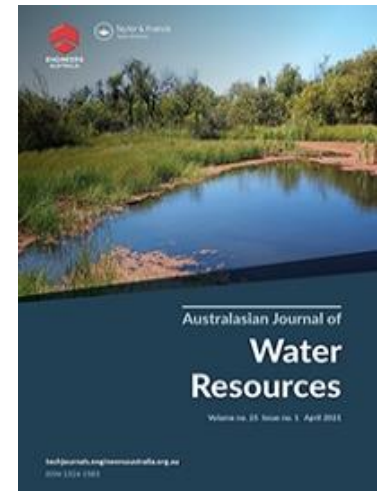
For more detail:

Australasian Journal of Environmental Management 2019: **[Vol 26\(3\)](#):**

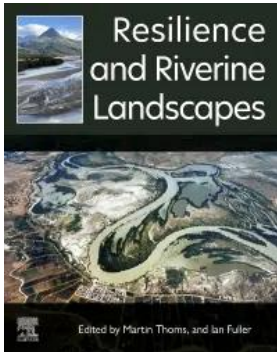
- Indigenous co-edited (Prof S. Jackson)
- Indigenous co-led and authored (Aust and NZ)
- Abstract written in **Nyikina Language**

Australasian Journal of Water Resources 2021: **[Vol 25 \(1\)](#):**

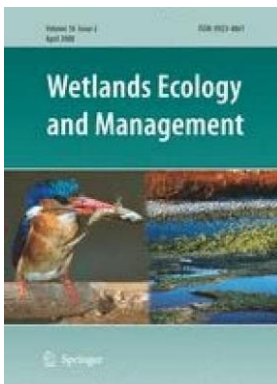
- Indigenous co-edited (Dr G. Tipa)
- Indigenous co-led and authored papers (Aust and NZ)
- ***GN Alexander Medal Winning paper*** (Moggridge and Thompson) from Engineers Australia; and
- River as the 1st Author (**Martuwarra RiverOfLife**)



For more detail:



Moggridge, B.J. and Thompson, R.M. 2023, In press. Indigenous Engagement to Support Resilience: A Case Study from Kamilaroi Country (NSW, Australia). Chapter 18, in Thoms M. and I. Fuller (Edss). ***Resilience and Riverine Landscapes***. ISBN 032391716X (ISBN13: 9780323917162)
Available January 2024



Moggridge, B.J., Thompson, R.M. & Radoll, P. (2022) Indigenous research methodologies in water management: learning from Australia and New Zealand for application on Kamilaroi country. ***Wetlands Ecology and Manage*** 30, 853–868 (2022). <https://doi.org/10.1007/s11273-022-09866-4>

Yanaay (I'm going now)

