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Kamilaroi (Indigenous) Knowledge and Methodologies to Inform Water management

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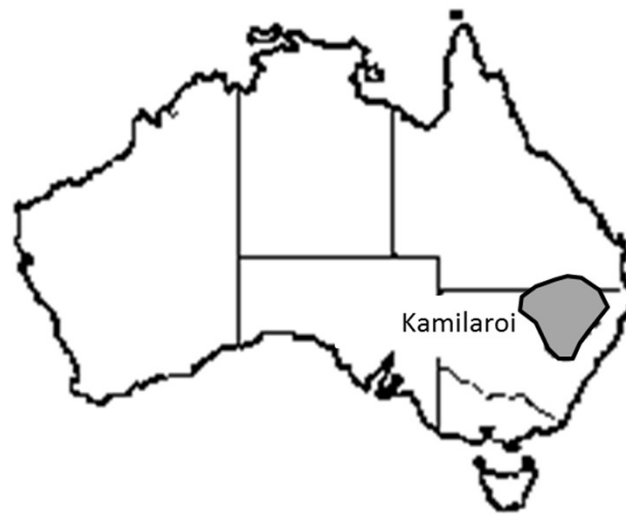
Centre for Applied Water Science

[@bradmoggo](#)

02/02/2023

Yaama, I Acknowledge I am on Ngunnawal Country

I am Kamilaroi





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Meme time

Facebook MEME, Day 1 in the Colony (and your land, knowledge, culture, language etc)



Cartoon
Today in the Colony





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Culture

- **Culture for me is:**
 - Who I am and **my mob**
 - **Respect**
 - **Always learning** culture – Traditional Knowledge
 - **Language**
 - **Family** or Kin (Uncle, Brother, Aunty, Sister)
 - **Connection to Country**
 - My cultural **water (gali) place** and My **cultural Species**

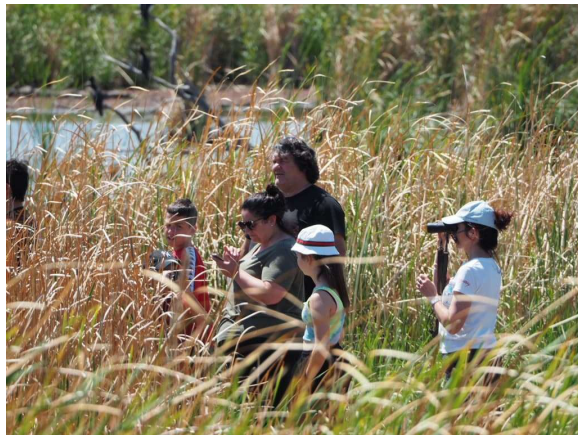


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Sharing Knowledge and Connecting

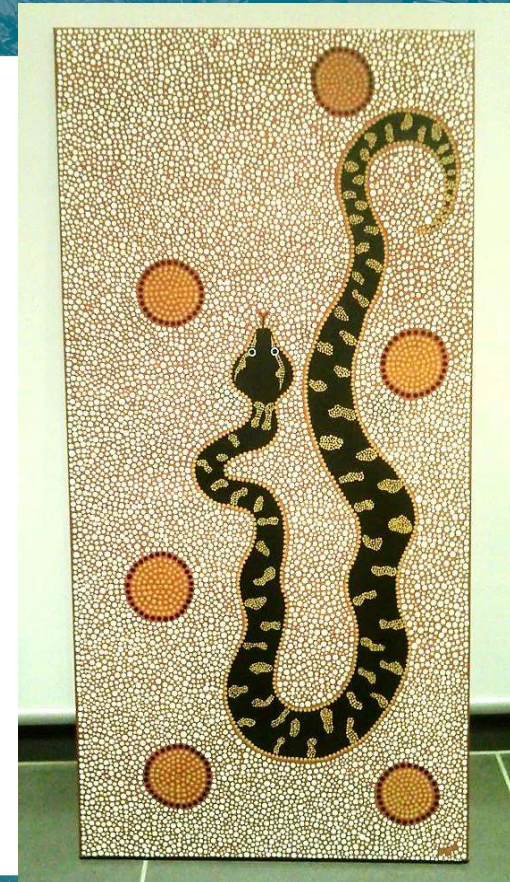


Cultural Value of Water

Water is protected by Lore, its in the songs, dances, Dreaming stories and art

Think of **Traditional Water Knowledge:**

- How the old people knew water
- Tell our stories our way about water
- Find and re-find water in a dry landscape
- Value and protect that water
- Culturally validate the knowledge





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Water Dependant Cultural Keystone Species



Maliyan (Wedge Tailed Eagle)
Aquila audax



Burrulga (Brolga)
Grus rubicundus



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Methodology Setting

- **Storytelling** is central to Indigenous epistemologies – Sci.Comm
- **Stories go in circles**, not a straight line hence - **Yarning Circles, Corroboree's** and concentric **designs in art**.
- However, our **storytelling has been perceived** as:
 - Myth and Legend, Tall Tales, Folklore, Fables etc etc....
 - Moves traditional scientific knowledge from science to fiction
- **Culture of science does not acknowledge the 1000's of generations** of observation/science as evidence



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My Methodology

- **Shift the research paradigm away from Kamilaroi peoples being the researched to becoming the researcher**
- **My knowledge (still learning) is about how I relate with people and country**
- **This differs to western thinking – gained and owned**
- **Fill the void in water management with Kamilaroi Science**
- **By Kamilaroi, With Kamilaroi, For Kamilaroi**

Recent article - 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 Management* (Special Issue). <https://doi.org/10.1007/s11273-022-09866-4>



My Cultural Water Places

Boobera Lagoon 2006



**Gwydir Wetland
(Gingham) 2018**



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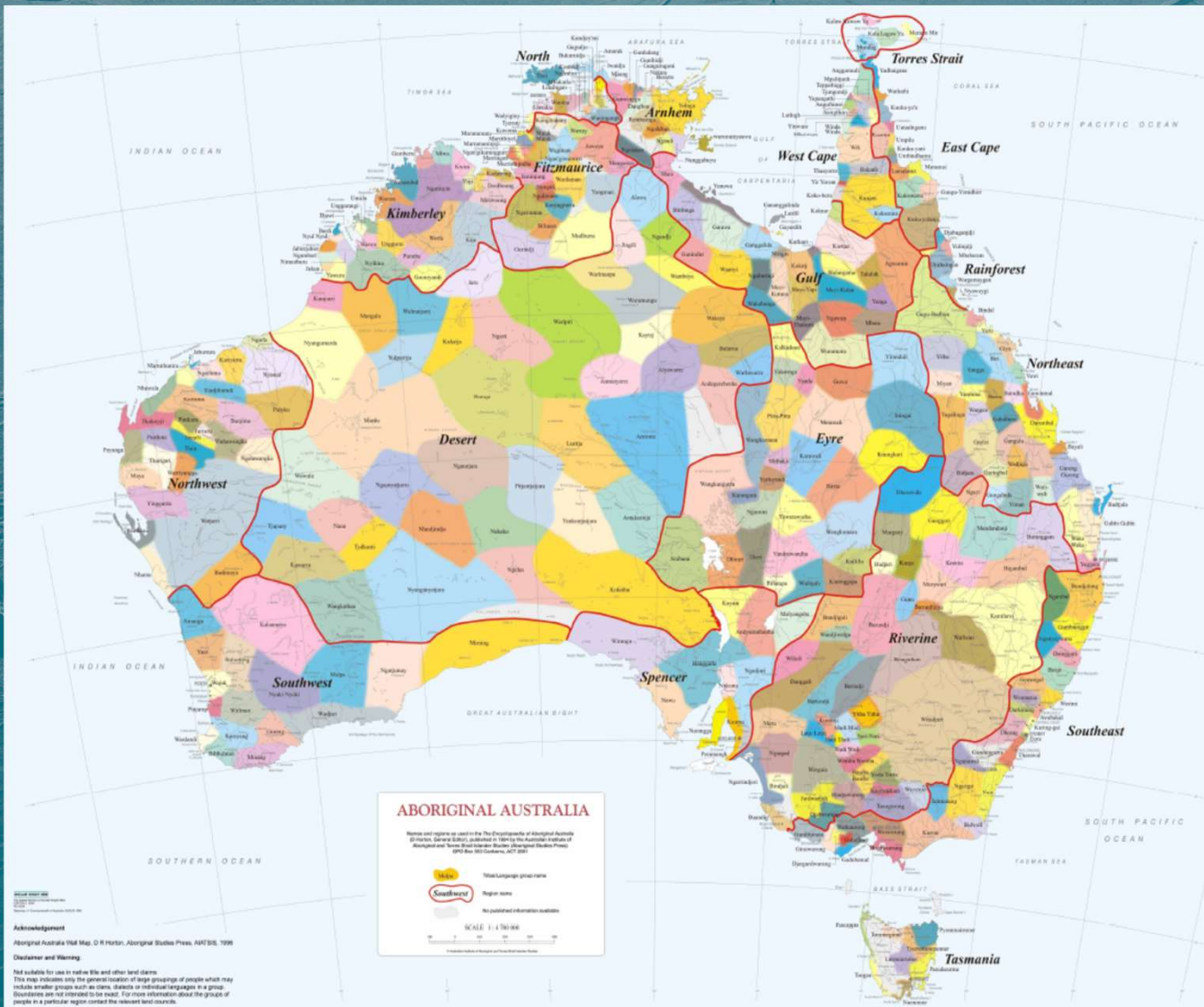
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My Methodology

**Can this Methodology fit into the
world of water science?**

Diversity

We are not all the same, every mob is different. That Difference is: Language, Lore, Landscapes, Cultural Practice, Capacity, Status and Governance.





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First Scientists and Traditional Knowledge

- **Traditional Knowledge of water is not myth and legend, folklore, fable or mumbo jumbo**
- **Traditional Knowledge is an ongoing understanding and thousands of years of observations of the driest inhabited continent on earth**



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Indigenous Knowledge and Science

- **Indigenous Traditional Knowledge** and **Traditional Science** is **old business** for us but new for western science
- The **methods and knowledges** are acquired (over thousands of generations) and somewhat different, but is there overlap?
- Acceptance and **cultural validation is hard to come by**, the culture of science may need to evolve
- **Lets collaborate and celebrate** and move beyond the Myth and Legend of Indigenous Knowledge and validate it through the Academy's.



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Sea Level Rise

Nunn and Reid (2016)

Stories from **21 Australian locations**, tell of a time when the former coastline of mainland **Australia was inundated by rising sea level**

Validating the stories to **7,250–13,070 years bp**

The authors add that longer-term cultural memories may be encouraged by:

- (a) **cultural isolation,**
- (b) **terrain with obvious physical reference points,**
- (c) **an environment whose harshness advantages people(s) with a good memory for what is where.**



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Volcanic Knowledge

Cohen et al (2017)

The team, from the Scottish Universities Environmental Research Centre (SUERC) paper in Quaternary Geochronology

The researchers used a technique known as **argon-argon geochronology** putting the **Kinrara** volcanic activity age at **7000bp +/-2000years**.

The team then connected it with a 1970's story from **Gugu Badhun people** speaking of dust in the air and earth on fire = **230 generations** of oral traditions and observation



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Volcanic Knowledge

**Is an Aboriginal tale of an ancient volcano the oldest story ever told?
Eruption 37,000 years ago may have sparked a legend about four
giants**



<https://www.science.org/content/article/aboriginal-tale-ancient-volcano-oldest-story-ever-told>



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Astronomy



Most recognisable story – **The emu in the sky** (photo from ANU) Dhinawan in the dark matter of the Milky Way

The sky is a copy of what's on earth, i.e.
Milky Way is a big River

Moon halos and No. of stars within = rain in No. of days

Meteors can mean many things some e.g. someone has passed or the eyes of the rainbow serpent or eyes of creators



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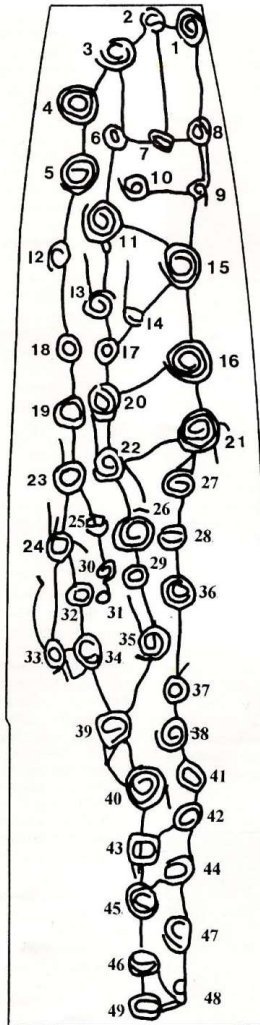
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Significant Papers

- Hamacher and Norris 2016** Australian Aboriginal Geomythology: Eyewitness Accounts of Cosmic Impacts? *Archaeoastronomy – The Journal of Astronomy in Culture*
- Cohen et al 2017** *Holocene-Neogene volcanism in north-eastern Australia: Chronology and eruption history*, Quaternary Geochronology Volume 39, April 2017, Pages 79–91
- Nunn P.D. and N.J Reid 2016** *Aboriginal Memories of Inundation of the Australian Coast Dating from More than 7000 Years Ago*. [Australian Geographer](#) Vol. 47, Iss. 1, 2016

Knowing Groundwater

1. Labbi-labbi
3. Liuwiringa
5. Maiyada-maiyada
7. Kirindji
9. Markodarindja
11. Wirrkaldjarra
13. Luwano
15. Tjul'tjun'waridji
17. Tildi
19. Kuna
21. Yinindi
23. Tanda
25. Palta
27. Binbiyan
29. Yirabanda
31. Yappadarra
33. Yuldumallo
35. Mukubanda
37. Karuwildji
39. Kiribarro
41. Wangadjarro
43. Tjimarri
45. Wirrarigulong
47. Miltji-miltji
49. Lola



5.0 cm

2. Tananga
4. Kunnamannera
6. Wirra-wirra
8. Kanandibaroo
10. Kampanbarro
12. Pinna
14. Kira
16. Dandju
18. Wakilbi
20. Pintinba
22. Yalbirrimanno
24. Kurandal
26. Kura
28. Tjipallalla
30. Dangalli
32. Timbabiddi
34. Kunagarri
36. Mari-mari
38. Wallabarrarba
40. Yanna
42. Wornba
44. Kunananno
46. Danneriyono
48. Papulba

A highly conventionalised map of the Western Australian water resources of the Bindibu [=Pintupi], as carved into the back of a spear-thrower.

Source: Redrawn from a photograph. Thomson (1962) in Bayly (1999) page 19 in Moggridge (2005).



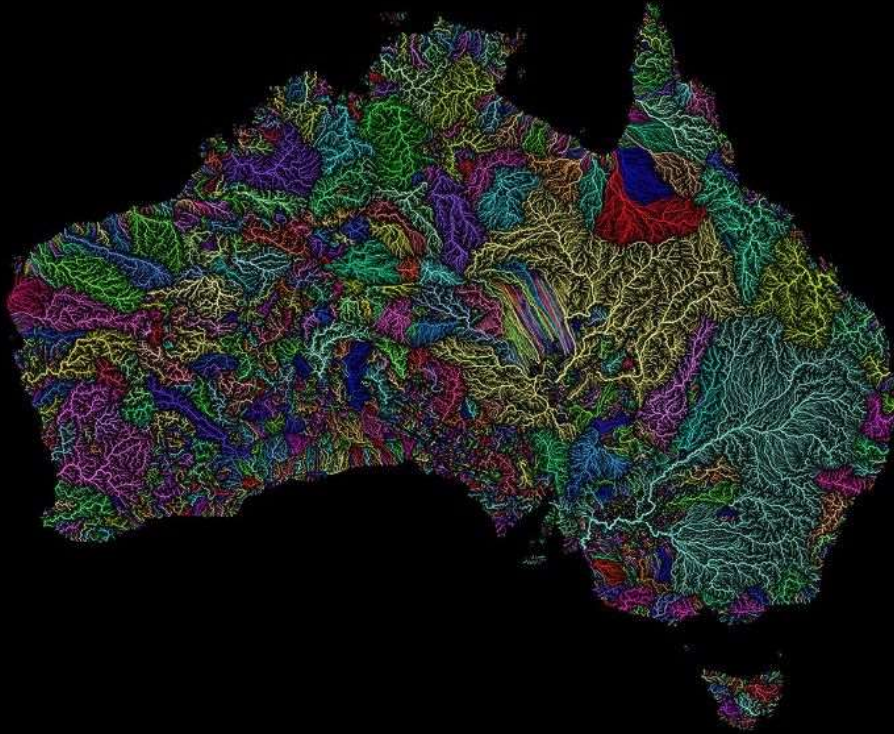
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Time to Celebrate

Robert Szucs/Grasshopper Geography



© ROBERT SZUCS/GRASSHOPPER GEOGRAPHY

**Something to
consider: We
have always been
here but,
why does
Australia not
celebrate our
Water
Knowledge?**



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Let's Advance Australia's Water Share

Water and First Peoples are connected, but where is our right to water?

What does history tell me?

- Our Land and Water was **given away**
- Our rivers were **modified, over-extracted and polluted**
- Our people were **not counted as Humans until 1960's**
- When we became human there was **no land or water left**
- So if we want water - **we have to buy it from the Market**



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Indigenous Engagement and Water Planning

Hope or Hopeless?

- National Voice to Parliament (pending referendum)
- States have committed to a path to Treaty
- Northern Territory – Strategic Aboriginal Reserves
- Fed\$40Million for water entitlements (\$0 spent since Nov2018)
- National [Cultural Flows](#) Research Program
- No restorative Justice by regulators as a result of water theft
- Rights of Nature (Rivers)



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The Rights of Rivers

2017 saw changes in this space:

- **Aotearoa - Whanganui River**
- **India - Ganga and Yamuna Rivers**
- **Columbia - Rio Attrato**
- **Australia - Birrarung (Yarra River) Protection Act**

Further in Western Australia the Martuwarra Council was created to protect a living being



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The Rights of Rivers

Giving a voice to rivers, does this mean we humans abdicate our responsibilities to protect them?

This is more than a water holder providing *eWater*

Australia has a history of not protecting the voices



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Refresher on our water voice?

Australia is still the **driest inhabited continent** on earth and yet one of the **oldest surviving cultures**, has no water voice

Our voice is absent, due to:

- Being impacted by **decisions that exclude us** (No Treaty)
- Being an **after thought or out of scope** (beyond the Welcome)
- Hearing of **what we don't have** (review after review)
- Non-Aboriginal voices **telling our stories** (no disrespect) (#fishkills)

Wait there's more, N.S.P



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Where is our water voice?

Our voice is absent, continued:

- Always Lacking **Free, Prior Informed Consent** or any **Vito**
- **We always walk in 2 (or more) worlds** and sometimes not fitting
- **Decolonise water law – Indigenising Water**
- Always **up the black** of reports, policy, plans, legislation
- No **National Indigenous Water Advisory** mechanism
- No **National Water Strategy** or **Centre of Excellence**
- **Government** always cycles deleting our programs



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The Rights of Rivers

Aotearoa - Whanganui River –

Ko au te Awa, ko te Awa ko au: I am the River, the River is Me

The *Te Awa Tupua Act* provides, all rights as a person

Australia - The Birrarung, *the river of mist and shadows*

Under the Act the river is a living entity.

The Act does not provide independent legal status but provides a Birrarung Council to advise on behalf the River



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The Rights of Rivers

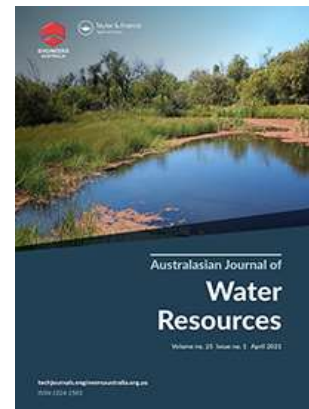
Can Rivers Protect Themselves?



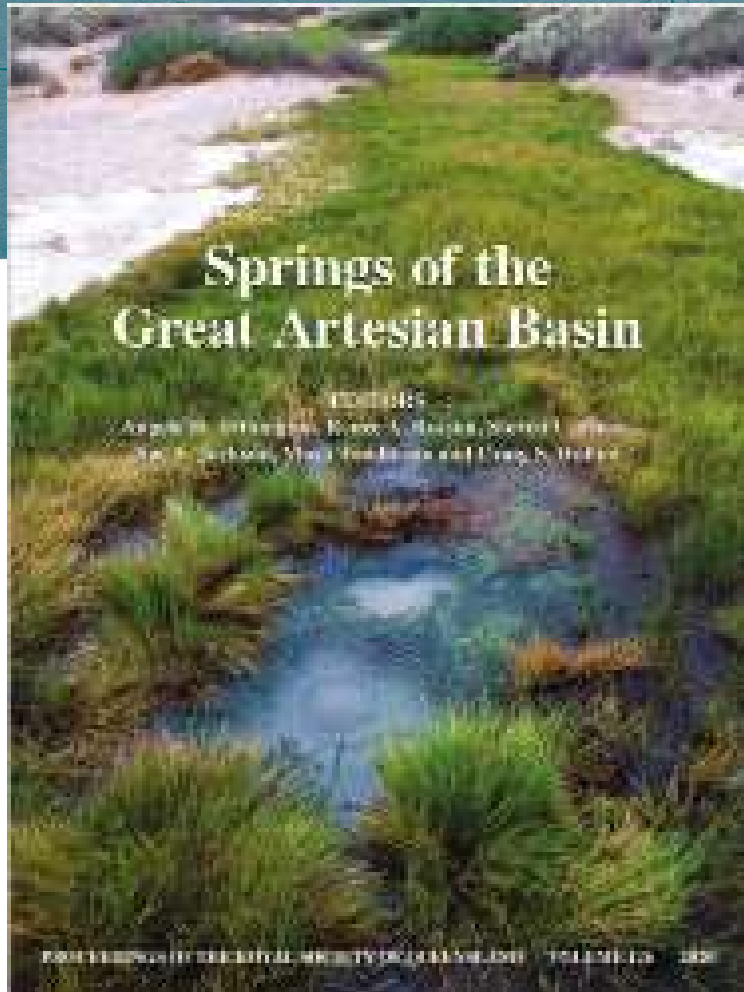
Indigenous Led Water Science

Co-edited 2 Special Issues and published papers both linking to Indigenous Values and Water Management:

- ***Australasian Journal of Environmental Management 2019:***
[Vol 26 Issue 3](#)
 - Indigenous co-led and authors (Aust and NZ)
 - Abstract written in Nyikina Language
- ***Australasian Journal of Water Resources 2021:*** **[Vol 25 Issue 1:](#)**
 - GN Alexander Medal Winning paper (Moggridge and Thompson); and
 - River as the 1st Author (Martuwarra RiverOfLife)



Resources



Moggridge, B. J. 2020 Aboriginal People and Groundwater. *Proceedings of The Royal Society of Queensland Vol. 126, pgs 11-27 GAB Springs Special Edition*

<http://www.royalsocietyqld.org/2020-springs-special-issue-vol-126/>

Never give up on that paper, this was published 15 years after writing.

Water Quality Resources

■ 2018 ANZ Water Quality Guidelines:

Cultural and Spiritual Values Guidelines

<http://www.waterquality.gov.au/anz-guidelines/guideline-values/derive/cultural-values>

Indigenous Principles for Water Quality

<http://www.waterquality.gov.au/anz-guidelines/guideline-values/derive/cultural-values/principles>



Cultural and spiritual values

Water resources have important cultural and spiritual values, particularly for indigenous peoples of Australia and New Zealand.

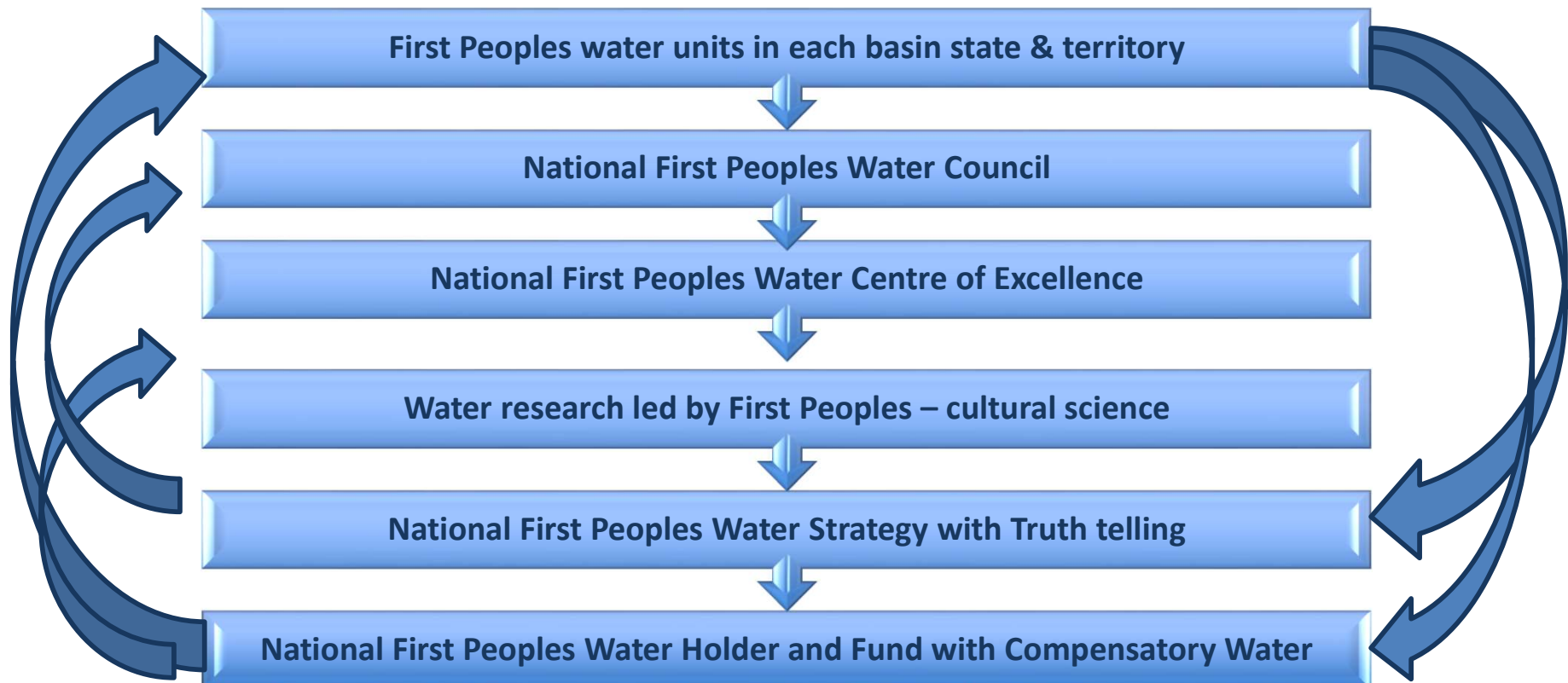


Indigenous principles for water quality

Adapted from text written by Brad Moggridge, Kamilaroi Nation, North-West NSW, Australia; and Roku Mihinui, Te Arawa Iwi, Rotorua, Aotearoa (New Zealand)



The Future of Aboriginal Water - in Diagram





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Yanaay (I'm going now)

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Centre for Applied Water Science

