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A tale of two rivers – Baaka and Martuwarra, Australia: Shared voices and art towards water justice

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Abstract

Two of Australia's iconic river systems, Baaka in New South Wales (NSW) and Martuwarra in Western Australia (WA), are described in a narrative that connects Indigenous custodianship, bio-physical features and art, and contrasts settler law with First Law to provide multiple ways of seeing the two river systems. Our narrative is a shared response to: (1) upstream water extractions that have imposed large costs on Baaka and its peoples; and (2) threats of water extractions and developments to Martuwarra. By scribing the voices of the two river systems, we have created a space to reimagine an emerging future that connects the past and present through the concept of 'EveryWhen', where First Law has primacy, and where art connects Indigenous knowledges to non-Indigenous understanding. Through a dialogue process with Indigenous knowledge holders, artists and water researchers, five action processes, or journeys, are identified to guide water decision making towards water justice.

Keywords

Country, Indigenous knowledge, Living Waters, water crisis, water governance

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'I walk along the river and climb down to cut a boomerang out of a bent red gum or black box tree root, then sit on the riverbank and cut it out and shape it. When I do something like this I am looking after my river and my Country, I can hear my old people talking to me, I can feel the slight breeze made by them moving around. It is what makes me who I am'.

Bates (2018: 2)

'Run free forever Mardoowarra, Martuwarra, Fitzroy River. . .ask the humans to be kind, they think they are on top of the tree but if they are not careful, we will all be left behind'.

From the *Balginjirr*, 'A Special Place on our Home Country'
Poelina (2021: 24)

Introduction: A narrative for water justice

The world has a water crisis (Grafton et al., 2023; Pastor et al., 2022) that is closely connected to Earth system justice that demands both safe and just earth system boundaries (Gupta et al., 2023), and requires water justice, that is, a process for transformational changes in relation to water, how it is used, what it is valued for, and who has voice and decision-making authority over how water is allocated over place and time. Many of the world's largest rivers in arid and semi-arid environments are suffering from declines in stream flow (Grafton et al., 2013) and water quality (Giri, 2021), degradation of riparian habitats (Vörösmarty et al., 2010), and diminution of cultural and aesthetic values (Garrick et al., 2017). These trends will likely be exacerbated by climate change (Cook et al., 2020; IPCC, 2022) noting that, with a high degree of confidence, there are already irreversible losses globally of freshwater ecosystems (IPCC, 2022: 11).

At a regional scale, much of southern Australia is already suffering from more frequent and widespread anthropological droughts (AghaKouchak et al., 2021; Wasko et al., 2021) which are expected to become more pronounced with climate change (Kirono et al., 2020). In the absence of remedial actions, the condition of riparian ecosystems, and their accompanying values, will decline (Thoms and Sheldon, 2000). Here, our focus is on two river systems, the Baaka-Lower Darling River (hereafter, Baaka) in southeastern Australia and the Martuwarra-Fitzroy River (hereafter, Martuwarra) in northwestern Australia (Figure 1). We selected the Baaka and Martuwarra for our narrative, in part, because there has been on-going dialogue process to connect Traditional storytelling between the two river systems since at least 2020 and because of their cultural and ecological importance.

Our narrative tells the story (Datta, 2018) of Baaka and the Martuwarra in multiple ways (e.g. bio-physical descriptions, institutions, art) and across different knowledges (e.g. cultural, relational, creative, scientific). Our focus is on Australian Indigenous access to water, beliefs and practices (Jackson, 2011) as a response to the water crisis and the injustices it compounds. To mitigate both the local water crisis and injustice of colonisation (Grafton et al., 2022a; Jackson, 2016), there must be sustainable responses to declines in freshwater availability, accessibility and quality. We contend these sustainable responses need to not merely be an 'adjustment' to business as usual but rather must promote transformational change that encompasses diverse ways of knowing that cannot be offered by any single discipline or perspective. Journeys towards water justice require ways to connect (Anderson and McLachlan, 2016; Grafton and Robin, 2005; Mehltretter et al., 2023) between seemingly distant geographies, disciplines, cultures and knowledge systems (Austin et al., 2019) and to overcome competing interests.

Our approach is a scribing of 'voices' (RiverOfLife et al. 2021d) of two renowned river systems through a narrative and visualisation that we call 'A Tale of Two Rivers'. Here, we mean

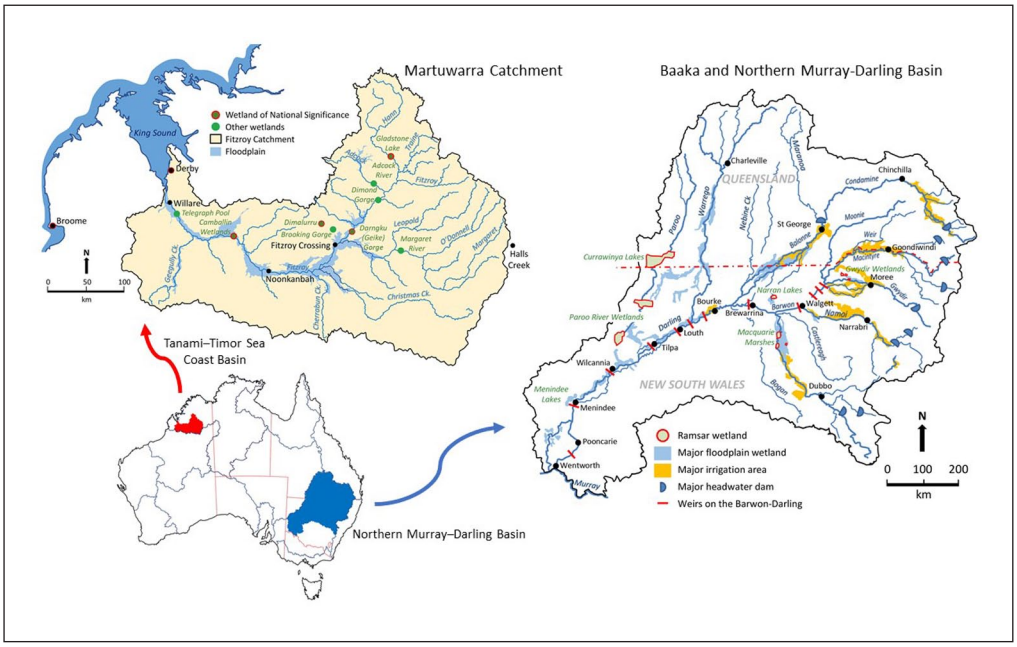

Figure 1. Martuwarra Catchment and Baaka including the Northern Murray-Darling Basin, Australia.
Source: The authors.

by scribing to see, hear, feel, interpret and understand, to place at the heart the voices of Indigenous artists, researchers and community members, through a creative, collaborative and imaginative process. This process is emergent whereby images, knowledge and experiences are woven into a text to tell a story of the two river systems and the love for them, guided by Traditional Custodians. This process demands 'deep listening' (Ungunmerr, 2015), with respect for multiple knowledges (e.g. Indigenous, hydrology, climate science, economics, etc.) across scales, from the local to the global, and a recognition of deep history (McGrath, 2015).

A Dialogue Process

Our narrative began as a coming together in late 2021, under the convening of the Water Justice Hub (WJH); its mission is to respond to water injustice and to promote both 'voice' and truth-telling in relation to water. The WJH is a group of non-Indigenous and Indigenous researchers and practitioners who work in support of the peoples and environments of Baaka and Martuwarra. The WJH is partially funded through a Laureate Fellowship awarded by an Australian Research Council Laureate.

The emerging narrative of 'A Tale of Two Rivers' began with a conceptualisation shared among co-authors. The co-authors have led different narrative sections, as informed by the literature, lived experiences and, for some co-authors, Indigenous knowledge. The sharing and discernment process, over many months, stimulated new thinking and a collective understanding that informed the narrative. Our artistic collaborations have established an inter-generational connection between two of the artist-co-authors; Elder Badger Bates of the Baaka and younger artist, Hozaus Claire, of the Martuwarra.

We adopted a dialogic process that included listening to Elders, sharing of understanding and knowledge, drafting of text and the creation and/or appreciation of art of the two river systems that is relational (Hart, 2010), consistent with the Narrative Research Approach (Moen, 2006) and draws from Traditional storytelling (Datta, 2018). In a one-day dialogue conducted on Yawuru Country near the mouth of Martuwarra on 25th May 2022, 13 of the co-authors of A Tale of Two Rivers came together to provide a visual narrative, in the form of a figure or figures, of the journeys or actions towards water justice informed by Indigenous knowledge and understanding of Baaka and Martuwarra. This was a deliberative step as part of a collaborative process intended to support the interests of the Indigenous Peoples and the two river systems, Baaka and Martuwarra.

The process of creating journeys, actions towards water justice, emerged at the one-day dialogue is consistent with; step 1 (establish dialogues and mobilise knowledges) and step 2 (plan for an enriched picture) for regional knowledge partnerships (Austin et al., 2019) and the EAUX (Mehltretter et al., 2023) principles of Equity (honouring Indigenous Peoples' sovereignty), Access (recognising and affirming Indigenous rights), Usability (benefits Indigenous peoples) and eXchange (on-going flow of information among diverse groups for mutual understanding) in support of 'braiding' of Indigenous and Western knowledge (Kimmerer, 2020; Woodward et al., 2020). The one-day dialogue was 'free form' in that there was no facilitation, but everyone was given multiple turns to contribute to the development of the figure and its accompanying narrative. Much of the discussion during the one-day dialogue was on the circularity (rather than linear) nature of both time and water flows and the recognition and love of Country are at the heart of justice.

'A Tale of Two Rivers' includes a selection of art, with a weaving together of both the text and the art of the two river systems. The art connects to either Baaka or Martuwarra Country and was chosen by the four contributing artist-co-authors. Here, Country is an Indigenous understanding and responsibility towards land, water and sky and everything in it and across time. Connection to Country to Indigenous Australians is a deep spiritual bond with the perception that Country is as a living kin such that place is alive and communicative between humans and non-humans and is the source of life, identity and culture (Janke et al., 2021: 14–17).

Two River Systems

Baaka and Martuwarra are complex bio-physical and living systems that encompass much more than their rivers channels and floodplains and have immense social, cultural, economic and historical values (Barber and Woodward, 2018; RiverOfLife et al., 2020a). They hold special values for the First Nations who have cared for, and been cared by, the rivers since the beginning of time and who assert that the rivers have a right to life (Poelina et al., 2019) that is recognised through 'ancestral personhood', an emerging form of legal personhood (RiverOfLife et al., 2021a). In the words of Elder Jeannie Warbie:

> *'Living water, this one. You never finish it, this water. Living water, this one. We want to. . . We grow along this water'* (Martuwarra Fitzroy River Council et al., 2021*).*

In Baaka and Martuwarra, as well as in many other regions across Australia, the 'Rainbow Serpent' is an ancestral deity and the creator of the rivers and lakes and water. For the Barkandji (People of Baaka), Baaka is home to the Rainbow Serpent, *Ngatji*, who created their Country and waters. It is the Barkandji who are responsible for *Ngatji's* health and wellbeing (Baaka Water Commission, 2022; Bates, 2018). The Nyikina is one of several First Nations who are connected to Martuwarra through First Law – the law of the land and living water systems (Poelina et al., 2019) – and have lived on and around Martuwarra for tens of thousands of years (Ross et al., 2016). To them, the

Rainbow Serpent is *Yoongoorrookoo* who is a lawmaker and giver of rain and life (RiverOfLife et al., 2021a).

Baaka begins near Brewarrina in northern New South Wales (NSW). Including its tributary catchments, it extends nearly 1500 km with a catchment area that exceeds 600,000 km^2 (Figure 1). The area around Baaka is flat and wide, and the river is famed for its steep banks and slow-moving waters that travel deep into the arid heart of NSW, receiving its flows from the vast and sprawling floodplains of its six main tributary catchments.

Martuwarra of the Kimberley region in WA has its headwaters arising in the Wunaamin-Miliwundi Ranges, where huge waterfalls create rapids through the rocky gorges of Country. The river eventually meets the sea at Kings Sound at the Indian Ocean. It extends more than 700 km in length and its catchment exceeds 90,000 km^2 (Figure 1).

In section two, we provide the following: a bio-physical description of the two river systems; an Indigenous-led dialogue between the two rivers that began in 2020; and art of the two rivers. In section three, we review governance from settler water law and Indigenous First Law perspectives. Section four, which emerged at a gathering of most of the co-authors in Broome on 25th May 2022, provides a description of the participants' journeys for Baaka and Martuwarra towards water justice. These journeys, that may include multiple pathways, provide a way to map proposed and existing governance pathways for the two river systems under the themes of 'Aboriginal values, objectives, and outcomes', 'climate change and ecological values' and 'infrastructure and water governance'. Section five concludes.

Baaka and Martuwarra: Infrastructure, voices and art

Here, we describe ways of understanding Baaka and Martuwarra. First, we provide a bio-physical, description, including of the water infrastructure, of the two rivers, second, we highlight some of the Indigenous voices of the rivers and, third, we provide a narrative of the art of the rivers by artists who are co-authors of this narrative.

Baaka

Baaka is in the Murray-Darling Basin (MDB) and connects the northern and southern parts of this large and complex river basin. It is reliant for its flows mainly on the Barwon River (Barre Warre Yulluk) and its tributaries, some of which originate in the state of Queensland, located north of NSW (Figure 1).

Within settler geography and the renaming of Aboriginal Country, Baaka typically begins at the confluence of the Culgoa and Barwon rivers in northern NSW. Baaka joins the Murray River at the town of Wentworth at the state border of NSW and Victoria, and its course encompasses a complex series of wetlands including ephemeral lakes, billabongs (pond or pool or water that remains after a flood or when a river has changed it course), channels, backwaters, riverine benches, saline lakes, swamps, deep riverine pools, claypans and extensive floodplains. A major feature of the region is the Menindee Lakes and the Great Darling River Anabranch, which is part of the ancient course of Baaka.

Baaka's annual flows are highly variable (Figure 2) to which biological communities and ecological processes have adapted (Thoms and Sheldon, 2000). In its lower reaches at the Burtundy weir (60 km upstream from the town of Wentworth), Baaka's historical annual median stream flow is 1277 billion litres, with extremely high inter-annual flow variability, ranging from 18 billion litres in 2003 to 9357 billion litres in 1956. The river is increasingly subject to low- or no-flow events during extended meteorological drought, an extended period of below normal precipitation

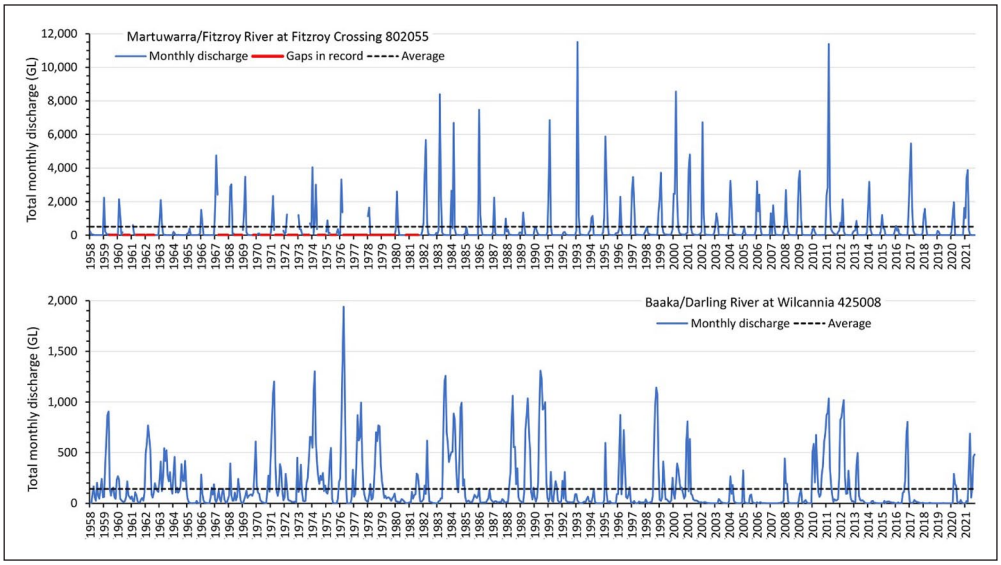

Figure 2. Monthly discharges of Baaka at Wilcannia and Martuwarra at Fitzroy Crossing (1958–2021).
Source: The authors.

(Figure 2). Prior to irrigation development in the 1960s, Baaka would flow for more than 90% of the time, characterised by short spells (generally one month) of no-flow (Mallen-Cooper and Zampatti, 2020; Stocks et al., 2021).

The Barkandji are and have always been the Traditional Custodians of their Baaka for tens of thousands of years. The earliest archaeological evidence of human occupation along Baaka is 45,100 ± 1400 years ago (Cupper and Duncan, 2006), while evidence from mussel shell middens shows the river was an important food source from at least 27,000 years ago (Balme and Hope, 1990). In the words of a Barkandji Elder Badger Bates:

> *'Our Baaka means everything to us, it is our mother. It is who we are. We take our name from it, Barkandji means people belonging to Baaka. The River is our memory, we walk along it and remember our history and our ancestors by looking at the marks and places'* (Bates, 2018: 1).

Upstream of Baaka is the Barwon River and its tributaries, principally the Macintyre, Gwydir, Namoi and Macquarie rivers. These rivers are heavily regulated by weirs, levee banks and other 'hard' or human-made and engineered infrastructure that, along with associated water extractions, have greatly reduced the volume and frequency of flow pulses (Mallen-Cooper and Zampatti, 2020). This has contributed to increased upstream water extractions that run counter to the rights of Indigenous peoples across the region (Nikolakis et al., 2016).

Water volumes diverted by harvesting that escapes from channels and over levees onto riparian floodplains along Baaka and all its tributaries have not been fully calculated, but the annual average diversions are estimated at between 632 and 926 billion litres in the NSW catchments (Brown et al., 2022). In addition to unrecorded water harvesting, *recorded* annual water extractions averaged 862 billion litres over the period 2004–05 to 2019–20 in northern NSW MDB (Brown et al., 2022, Supplemental Table S4) and are in the order of 1,700 billion litres in total from all tributaries (Grafton et al., 2022b). These extractions have reduced Baaka's stream flows at an accelerated rate

over the past 20 years (Grafton et al., 2022b), contributing to widespread degradation of the ecosystem services along the river and its adjacent wetlands (Australian Academy of Science, 2019; Davies et al., 2010; Kingsford et al., 2017; Thoms and Delong, 2018; Thoms and Sheldon, 2000). This declining ecological health has had severe impacts on the health and wellbeing of river communities, and especially the Barkandji.

Despite their deep and multi-millennial connections to Baaka and being recognised in 2015 as native title holders (see *Glossary*) for 128,000 km^2 of land in Western NSW (Black et al., 2015), the Barkandji have very limited legal water rights over their sacred river. The Barkandji, along with other native title holders including the Ngiyampaa, Ngemba and Murrawarri Peoples, continue to suffer from a situation where: '. . .existing [non-Indigenous] water users hold the power to continue to enjoy and benefit from access to highly valuable water resources, while power and agency for Aboriginal peoples to do similarly remains obstructed' (Hartwig et al., 2018). As documented in Hartwig et al. (2021: 44), a Barkandji Native Title Holder related in 2017:

> *'They basically told us at the session a couple of weeks ago [a government-facilitated groundwater consultation] that the extraction of water is going to go ahead anyway, so if we don't negotiate and get involved, they're going to go and do it anyway! My point for being involved is for them to know that we don't support it, even if they go ahead with it. We have to look at social justice for us, for our cultural rights and for the cultural identity of our generation, and the generations to come after us'.*

Baaka infrastructure. First Nations across Australia have made extensive use of built infrastructure to manage Country for different purposes (Page and Memmott, 2021). Barkandji created many in-stream stone-walled fish traps focussing on mass migrations of fish during spring and summer floods (Ellis et al., 2021; Martin et al., 2023). These fish traps also provided food for small local groups during periods of low or no flow. Barkandji utilised the flooding lakes and billabongs (i.e. oxbow lake) and enhanced these habitats. They also managed the movement of water back into the river channel through wooden and earthen weirs, fish traps and fish nurseries; and this provided temporary rich and diverse habitats for aquatic plants and animals.

There are numerous sites of traps along Baaka, especially around the town of Wilcannia. Fish trapping structures were used to store supplies for large gatherings of people (Ellis et al., 2021). Many of these stone in-river water infrastructures, including traps made by Barkandji from wood and other natural materials on the floodplains, were destroyed during the colonial period to enable river navigation by paddle-steamers between Bourke and Wentworth (Wainwright, 2017). Nevertheless, Barkandji continue to practise their timeless fishing methods at weirs in Wilcannia and Menindee by moving rocks to manage water levels and form fish enclosures.

The hydrology and aquatic ecosystems of Baaka have been modified by 10 town water supply weirs, and at least a further 19 weirs on Baaka or on its tributaries. An inquiry of the NSW Parliament found that many of these weirs exhibit deficiencies, including poor condition, provide no meaningful function and lack clear ownership (WaterNSW, 2021). Weir modification is currently a central focus of the state sponsored 'Better Baaka' programme, with proposed projects including fish passages, increased town weir heights, and reinstatement of rock bars (Department of Planning and Environment, 2022). Weirs and additional 'hard' infrastructure on Baaka, however, may damage the remains of Barkandji stone walled fish traps, as well as important Barkandji story lines (Martin et al., 2023).

Infrastructure development and water extractions have significantly altered the hydrology and aquatic ecosystems of Baaka. Historical records show near-perennial flows, flowing-water habitats and annual flood pulses along Baaka (Mallen-Cooper and Zampatti, 2020). By contrast, still-water conditions, dry riverbeds and disconnected pools along Baaka are characteristic of modern-day

droughts. Under low-flow conditions along Baaka, weir pools can create up to 1000 kms of artificial still-water stretches (Mallen-Cooper and Zampatti, 2020). Poor water quality from diminishing weir pools generates negative social and ecological impacts (Natural Resources Commission, 2019), including mass fish kills (Ellis et al., 2021; Stocks et al., 2021).

At 12 m high, the Menindee main weir is the largest in-river water 'hard' infrastructure on Baaka. This structure creates Lake Wetherell and diverts water from Baaka into the Menindee Lakes System (MLS), which also includes a series of naturally occurring seasonal or ephemeral lakes (including Lakes Pamamaroo, Menindee and Cawndilla) that historically filled as water over-topped riverbanks onto the floodplain. In the 1960s, channels, weirs and other regulating infrastructure were constructed to operate the MLS – as water storage infrastructure to supply downstream irrigation and other water users; as well as for the large mining town of Broken Hill approximately 100 km to the west. These lakes are large and have a combined surface area of 457 km^2, but are relatively shallow, with an average depth of under 4 m, and a total storage capacity of 1731 billion litres (up to 2050 billion litres during flood events) (Murray Darling Basin Authority [MDBA], 2022). Habitat provision for birds and fish is among the many important cultural and ecological values of the lakes (Maloney et al., 2020). The lakes also provide an important nursery habitat for native, such as Golden Perch. The consequences of this infrastructure on the functioning of Baaka are captured in the words of Barkandji Elder Badger Bates:

> *'What happens when big companies come out and they do a lot of irrigation, take the water from the rivers and that. All the fish had died. It was here. Because what they got, they got big wall like that, that go right across Baaka, they built a big wall, but the fish was trapped because they couldn't move'* (Martuwarra Fitzroy River Council et al., 2021).

Following no-flow events in 2018 and 2019 (Australian Academy of Science, 2019), there was a series of massive fish kills along Baaka and Menindee Lakes, and again in February and March 2023 as the result of a 'blackwater' event when water has a very low level of dissolved oxygen and that kills fish (Williams and Schulz, 2023). A interpretation of the impacts of anthropogenic drought (AghaKouchak et al., 2021), that arise from both meteorological (e.g. reduced precipitation) and anthropogenic actions (e.g. water extractions for irrigation) are shown in the linoprint by Badger Bates in 'The Forgotten River and the Desecration of the Menindee Lakes by Badger Bates (see Figure 3). This work shows Baaka and Lakes Pamamaroo, Copi Hollow and Menindee, the wrinkly marks indicate the lakes are drying up and the fish are dying, with the three Murray cod in the weir pool, while the rest of the river is drying. The handprints are three generations of the artist's grandmother's family, and the footprints of two generations. In the words of the artist:

> *'These prints mark our belonging to this land and water, and we are saying stop this desecration now. White people and black people sobbed and cried for the loss of a way of life that had sustained Barkandji for many thousands of years'.*

In 2019, the NSW Government completed construction of a pipeline from the Murray River to supply municipal water to Broken Hill. The goal was to reduce the town's dependence on the MLS. From 2016, the New South Wales state government began planning to reoperate the MLS, including a more rapid drawdown of Lake Menindee and decommissioning of Lake Cawndilla, under the Sustainable Diversion Adjustment Mechanism (SDLAM) of the Murray Darling Basin Plan (Blackwatch Consulting, 2017). The claim was that the SDLAM for the MLS could 'recover' 106 billion litres annually by reducing lake volumes and evaporation (Department of Primary Industries, 2016). This volume of water 'saved' from evaporation would then 'offset' purchases of water entitlements from irrigators to meet environmental water recovery targets in the Basin Plan. Strong

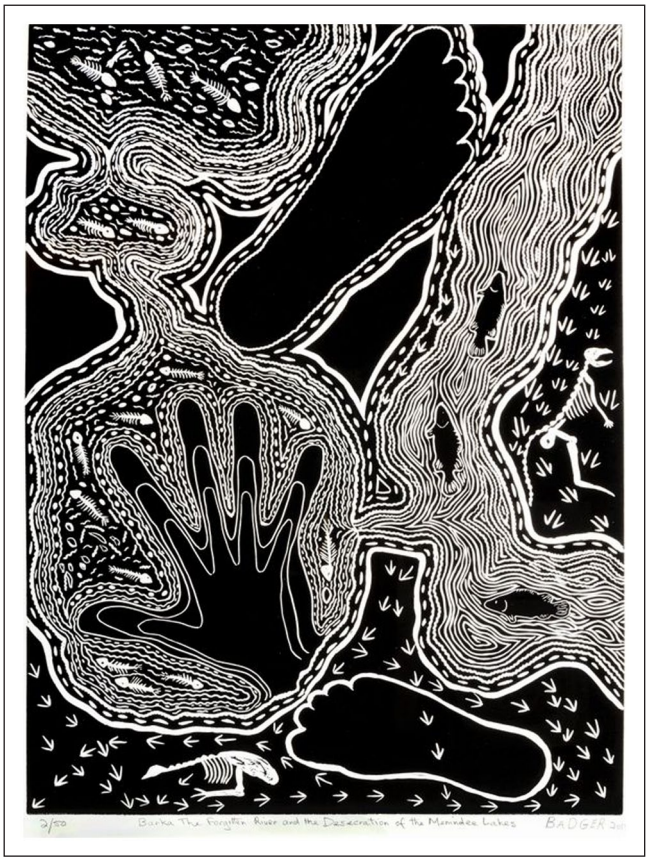

Figure 3. 'Barka The Forgotten River and the Desecration of the Menindee Lakes' by Bates (2018).
Source: https://www.agsa.sa.gov.au/collection-publications/collection/works/barka-the-forgotten-river-and-the-desecration-of-the-menindee-lakes/64799/.

community opposition to the MLS Water Savings Project (e.g. Menindee Lakes Stakeholder Advisory Group, 2021) led to the project being rescoped (New South Wales Government, 2022).

Martuwarra

Martuwarra is the largest river system in the Kimberley region of WA (Figure 1). It '. . .provides life to the West Kimberley. From the ranges it winds its way through the remote tropical savannah region on the edge of the desert, passing through the rich floodplain riparian vegetation before branching into a vast delta that merges into the King Sound south of Derby [town]' (Poelina et al., 2019: 242). The Martuwarra catchment contains important biological, conservation and geo-heritage values, significant Indigenous values. Its estuary also provides critical habitat to the world's most important populations of at least three threatened species of fish: the vulnerable Freshwater Sawfish (*Pristis pristis*), the critically endangered Northern River Shark (*Glyphis garricki*) and the vulnerable Dwarf Sawfish (*Pristis clavata*), among others (Museums Victoria, 2022).

Evidence of the processing of spinifex resin, fishing, bird hunting and other activities, indicates human occupation along Martuwarra for at least 35,000 years (Langley et al., 2021), and there is evidence of continuous human occupation in the Kimberley for at least 50,000 years (Veth et al.,

2022). Even older evidence of human occupation of other parts of Northern Australia, not in the Kimberley, goes back 65,000 years (Clarkson et al., 2017).

Like the Baaka, the Martuwarra has a huge variation in its annual flow, but there are no major diversions for irrigation from Martuwarra (Figure 1). Median annual discharge at the Martuwarra mouth is around 4300 billion litres per year, but in low-flow years it can be one-tenth of this volume. Martuwarra's high flows are seasonal, occurring during the summer wet season, and 87% of all catchment runoff occurs between January and March, recharging artesian aquifers (Petheram et al., 2018: 19), some of which discharge as surface flows during the dry season (Petheram et al., 2018: 54).

Although current diversion volumes are unknown, six billion litres of surface water have been allocated for licenced diversions (Petheram et al., 2018: 117), less than 1% of those from Baaka, despite having three times the annual average flow. The WA government has proposed an option of extracting up to 408.5 billion litres per year from Martuwarra, comprising 300 billion litres of surface water and 108.5 billion litres of groundwater (Government of Western Australia, 2020: 22). Current land use is dominated by rangeland grazing and a very small area of irrigated cropping land. The land tenure is about 90% grazing leasehold, often co-existing with native title, which is recognised over the majority of the catchment and where 16 of the 44 cattle stations are Indigenous owned or managed (Petheram et al., 2018: 104).

Martuwarra infrastructure. Aside from bridges at Fitzroy Crossing and Willaire (see Figure 1), the only major piece of 'hard' infrastructure on Martuwarra is the Camballin Barrage. This barrier across the main channel of Martuwarra was built in the 1960s to divert water for large-irrigated rice production that, ultimately, failed despite substantial government and private investments (Yuhun, 1985). A 2020 WA government discussion paper about Martuwarra includes an explicit 'no dam policy' for the mainstream and tributaries (Government of Western Australia, 2020). Nevertheless, off-river intercepting water infrastructure for floodplain harvesting and storage is an option.

The Camballin Barrage provides river access for recreational fishing, but it continues to impose negative ecological impacts: fish can only navigate past it for approximately 3 months per year, and juvenile migratory species trapped below the barrage are highly vulnerable to larger predators that, in turn, are targeted by recreational fishers (Morgan, 2005). Along Martuwarra is also the Uralla Creek-Enkarta Irrigation Channel that is licenced to take up to 6.4 billion litres from the Fitzroy and tributaries.

A 'coming together' of Baaka and Martuwarra

First Nations of Baaka and Martuwarra have always been, and will always be, the Traditional custodians of the two river systems. Through the convening leadership of a Barkandji Elder, Badger Bates and Anne Poelina, a Nyikina Warrwa marmin [woman] and Chair of the Martuwarra Council, a dialogue between Baaka and Martuwarra has begun. This started with a water sharing ceremony, with messages from the voices of Baaka, at Fitzroy Crossing on Martuwarra (Figure 1) on the night of the Blue Moon, 31 October 2020. It continues with this narrative, and included a one-day dialogue in Broome of co-authors on 25th May 2022 to map journeys towards water justice for the two river systems.

Voices of Baaka as told by Elder Badger Bates. There have been immense changes in the climate over the last 50,000 years along Baaka, to which Barkandji have learned to adapt and to thrive. Tens of thousands of years ago the area around Wilcannia and Menindee in Western NSW (Figure 1) became an oasis of new and old channels of the river, anabranches, creeks, large shallow lakes,

billabongs, swamps and springs coming up from underground. These places provided everything: fresh water, fish, yabbies, shrimps, mussels, turtles, birds and birds' eggs, seeds to grind, starchy tubers and yams, nuts, fruit and, in winter, greens were everywhere. Barkandji also collected grass seeds and acacia seeds and ground them up on their large grinding dishes for porridge and bread.

Barkandji have stories that explain the river's creation and how everything works, and how to look after the river system. Barkandji are also brought up to know where Ngatji, 'our Rainbow Serpent', lives. Barkandji know the waterholes in which Ngatji lives, and where Ngatji travels underground from water to water. The Ngatji keeps Baaka healthy, makes the underground waters and the springs, and the waterholes in the river that never go dry. People who are not Barkandji now pump water from shallow bores near the Ngatji waterholes, but they do not understand like Barkandji that the waterholes, the aquifers, and the springs are all linked, they are all made by the Ngatji. If the Ngatji dies, Baaka dies.

When the European settlers arrived, they wanted to have it all, but Barkandji still survived on the river, and because of the river. Barkandji never left their Country, they are still there, and they love their Country, and it loves them back. But Baaka, and the Barkandji way of life with it, is disappearing because of upstream water extractions. Barkandji see that their river has been unusually dry over the past 20 years. This has resulted in stagnant pools with little life that has led to the death of catfish first, silver perch and then mussels, while the river snail disappeared years ago. Barkandji are also witnessing the decline or the disappearance of birds, water spiders, river boatmen, water rats and water lizards, while river plants and floodplain plants are dying.

Voices of Martuwarra as told by Elder Anne Poelina. The First Laws of Martuwarra are ancient and are 'shared as one society' by Martuwarra First Nations through a common 'songline'; stories that connect places of knowledge and that are embedded in Country (Neale and Kelly, 2020). First Law recognises the River as the Rainbow Serpent: a living ancestral being (RiverOfLife et al., 2020c, 2021a) from sea to the source. According to a Director of the Bunuba Gooniyandi Aboriginal Corporation, located in Martuwarra Country:

> *'It is living water, and we survive from the river. It is everything we need. Drink water, catch fish, that is your food bowl in the river, even plants and animals along the river, bush tucker'* (Barber and Woodward, 2018: 47).

Further, Martuwarra '. . .is a living water system and therefore must be treated with the dignity and respect of a sacred ancestral being with its own right to life, and its right to flow' (Poelina, 2021: 204). Senior lawman, John Watson, on Nyikina Country, recounts that:

> '. . .a man called Woonyoomboo was a great leader who sung up country in the Bookarrakarra, dreamtime, and made Maduwarra for us, the river kartiya (whitefellas [i.e., non-Indigenous people of European descent]) called the Fitzroy' (Watson, 2012 in Allbrook: 7, 2012).

Since Bookarrarra, the beginning of time, Martuwarra nations have co-existed as one society in peace and harmony while managing their living land, water and people systems under Warloongarriy Law. This is a law of obligation to protect Martuwarra across the circle of time; past, present and future. The colonial historical perspective captured from 1838 records a world of plenty, sharing, singing and dancing; a world of abundance with ducks, fish, meats and all types of bush foods. The state of Martuwarra managed by Traditional Owners from the beginning of time, however, changed with colonisation and resulted in the enslavement, poverty and overwhelming disadvantage of First Nations (RiverOfLife et al., 2020a).

Elder Butcher Wise, in a meeting with government, pastoral and mining stakeholders, stated in relation to proposed water extractions from Martuwarra:

> *'. . .you came, stole the land, you made us slaves, and now you are back for the water, what is going to be left for Blackfellas [i.e., Aboriginal people]'* (Poelina et al., 2019).

This description links values and water ethics on multiple levels such that the past, present, and future co-exist simultaneously (Alderete, 1999) and are heard in *Martuwarra Fitzroy River of Life* (Martuwarra Fitzroy River Council et al., 2021). In the words of Elder Joe Brown:

> *'This River got story, you know, big history. That's Walangarri's (Warloongarriy Law) Dream. If River going to go dry, that kill our culture. We need to fight for this river, not to drain all the water out'* (Martuwarra Fitzroy River Council et al., 2021).

Six First Nations of Martuwarra established the Martuwarra Fitzroy River Council (hereafter Martuwarra Council) in 2018 as a direct outcome of the 2016 *Fitzroy River Declaration*, when Traditional Owners agreed: '. . .throughout the catchment to work together to ensure the survival of the river and to maintain Warloongarriy, First Law' (Poelina et al., 2019: 245). The Martuwarra Council: '. . .promotes inclusive collaborative long-term planning, and sustainable development that incorporates the ongoing needs of humans, the environment and culture' (Poelina et al., 2019: 248).

Elders of First Nations along Martuwarra, through their films and publications, have championed cultural values and water ethics through 'Living Waters', First Law, Indigenous sciences and water governance from the oldest water guardians (Milgin et al., 2020; RiverOfLife et al., 2021c). This ancient wisdom guides the Martuwarra Council in the transition to new emerging, and water dependent, economies of culture, science and conservation that deliver sustainable lifeways and livelihoods (Australian Conservation Foundation, 2021).

Art and water

A key part of our narrative is to connect different ways of understanding; from the literal to the imaginative and across the senses, from listening to seeing, to obtain a holistic of way of knowing better the river systems. Thus, in this sense, images bring observers into relation with water (Bleiker and Butler, 2016). Importantly, for 'A Tale of Two Rivers', art is deeply embedded in the history of the river systems and how they are and should be governed. This thinking is captured by:

> *'everything is alive, everything is related, and everything is participatory'* (Kwaymullina et al., 2013: 3).

The art of the river calls us all into a relationship with its truth such that the participant, by 'listening through seeing', is connected to the narrative of the artist (Poelina et al., 2022). That is, art can transform the observer from a detached spectator to a participant who seeks to connect to the story of Country, inviting the viewer into relationship with Country by sharing the artist's story telling.

Aboriginal art is frequently a provocation. It often includes 'looking down' on Country, be that a physical or a cultural scape, and can be used to convey knowledge about cultural protocol and social and kinship systems (Moore, 2007). Art about Country encompasses ancestral entanglements of the artist with their local ecological family. In Iron Pole Bend (See Figure 4), for example, Elder Badger Bates combines the ancestral memory of a river and the story of familial connection to land and water through his personal memories (Somerville, 2013).

Water in Aboriginal art frequently holds dreaming stories, song lines, law and the pragmatic material knowing. Water connects communities, brings food and sustenance, allows for travel,

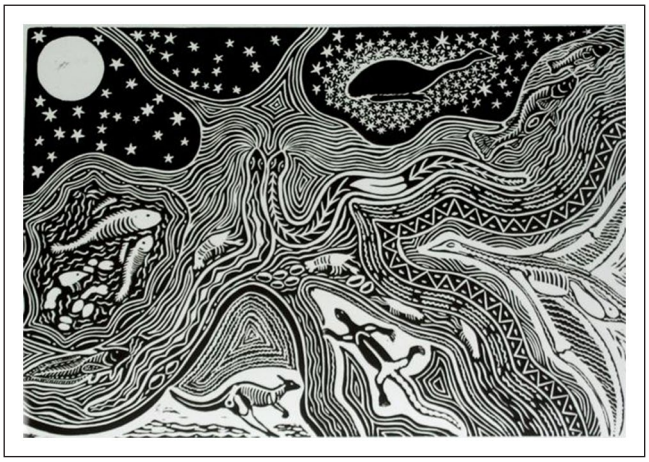

Figure 4. 'Iron Pole Bend, Wilcannia' by Bates (1996). Linotype by William (Badger) Bates. Originally published in Rose (1996).
Source: https://www.researchgate.net/publication/262574126_Developing_relational_understandings_of_water_through_collaboration_with_Indigenous_knowledges/figures?lo=1.

provides a border or boundary and refreshes and rejuvenates life. Water sings, speaks, whispers and enunciates wisdom. Importantly for our narrative, rivers are living waters that are alive, conscious and relatable (Poelina, 2021), and the art of rivers shares this understanding and is a form of knowledge transfer. According to Burarrwanga et al. (2022: 3) this involves:

> *'Learning about water, being with/as water, from an Indigenous perspective means centring connection, centring co-becoming'.*

In sum, water in Aboriginal art is often a portrayal of connection, respect, responsibility and reciprocity. The patterns of connection between places of gathering, hunting and ritual involve the portrayal of water, not simply as a flow or resource, but as the conduit of wisdom, culture and First Law. This means that art about a river, and here it is about Baaka and Martuwarra, serves a purpose – emotion and even understanding can be communicated to observers to tell the artists' essential truths (Poelina et al., 2022).

Art of Baaka and Martuwarra

Connections between the artist, their community and waters are foregrounded in the artworks here reproduced. From Baaka, 'Barka: The Forgotten River and the Desecration of the Menindee Lakes' (2018) and 'Iron Pole Bend, Wilcannia', both by Bates (1996), respectively Figures 3 and 4, depict intersecting relationships. The art of award-winning artist Ruby Davis which depicts a dry riverbed, 'Water as Life; The town of Wilcannia and the Darling/Baaka, 2006' (see Figure 5). From Martuwarra, Hozaus Claire's painting, 'Spirit of Martuwarra' (see Figure 6) expresses knowledge of, and connections to, land and water.

Art of Baaka as told by Ruby Davies. An image of Baaka (Figure 5) in the National Gallery of Australia is 'Water as Life; The town of Wilcannia and the Darling Baaka, 2006' (hereafter, Water as Life). The artist is Ruby Davies who was a finalist in the National Photographic Portrait Prize 2007. Her work portrays the people of Wilcannia in a water-less Baaka (National Portrait Gallery, 2023).

Figure 5. 'Water as Life: The town of Wilcannia and the Darling/Baaka 20 August 2007' by Ruby Davies.
Source: The artist.

Figure 6. 'Spirit of Martuwarra' by Hozaus Claire (2022).
Source: The artist.

The art of Ruby Davies is inspired by a deep affection and love of Baaka. The first time her grazing family witnessed Baaka at low or no flow was in 1994, which started a journey for her. She has returned many times to various places along the river to understand and to visualise the degraded quality and quantity of river flows.

Her art depicts land and landscape, and images and visions of Country. Since Water as Life was first exhibited, much has changed; but concern for the health of the river by the artist has not. Dying fish and images of grown men in despair at Menindee went 'viral' in 2019, highlighting that life exists along Baaka because it brings water to this semi-arid Country. In the words of the artist:

> *'With this work [Water as Life] I am making art about visions of place in the late 20th and early 21st centuries. How we see land, landscape, country, our visions of its past and its future influences in turn, our interactions with, and our care for or destruction of this river system'.* (Ruby Davies, personal communication)

Art of Martuwarra as told by Hozaus Claire and Elder Anne Poelina. Hozaus Claire is a young Indigenous artist, storyteller and leader from the Kimberley, WA. He has been mentored by Elders of his family and the Martuwarra Fitzroy River Council to speak up for Martuwarra Country and people. Hozaus leads the Martuwarra Youth Council and through his multiple ways of storytelling; art, digital storyteller and exhibitions. In 2023 he became an 'artist in residence' at the Australian National University with a visitation and welcome to the Baaka, as part of the Water Justice Hub, in May 2023.

Hozaus Claire describes fishing and hunting as an important part of his schooling, his education. Importantly, with the guidance of senior Elders, his art 'captures' the River to allow others to feel and to hear how the River is important. His award-winning paintings provide meaning and connection and show his love for Martuwarra; a happy way to learn about and share his non-human kin (Poelina et al., 2021). To him, 'Coming Down the River' is important, both therapeutic and as a time of learning.

To Hozaus Claire, Martuwarra is his home. It is his shelter. It is his education. His relationship to the River is very much a spiritual feeling and, to him, his Country works in a mysterious way. To the artist, the land where he walks is where many of his ancestors walked before and are still there, they are still alive today. Hozaus Claire's painting, 'Spirit of Martuwarra' (see Figure 6) is his expression of his connection to land and water, especially the Spirit of water. The perspective is from a birds-eye; the water brings and keeps everyone together and shows how all animals and people are connected spiritually. The story is in the ground and on the land to which First Nations speak.

In 'Spirit of Martuwarra' the circles represent the significant sites called *Jila*, which means Livingwater. Livingwaters are based on where each different nation belongs, but they are all still connected underground. These connections hold a story, and it is the same story, but in a different language. In the painting, the creek that runs off the River, feeds hunting grounds and the disconnected water holes, keeping them to provide medicines, bush tuckers, plants and trees that First Nations use to make tools, to tell the story and to sing their songs and dances. The colours represent the resource that water provides beyond its boundary. The water has a movement – it can be calm or fast. During the dry season, the groundwater and surface water are calm. Movements emerge when the full moon comes out. This is when the groundwater can become surface water, but the River stays calm. During the wet season, when the Rainbow Serpent comes alive, the water moving through country changes, it cleans the land. And the River continues providing for the future.

Governance for Baaka and Martuwarra

The states of NSW and WA have distinct water governance structures for water and rivers, which are represented in Figures 7 and 8, respectively. These schematic representations locate key institutions and functions of relevance to the federal and state governance of Baaka and Martuwarra with

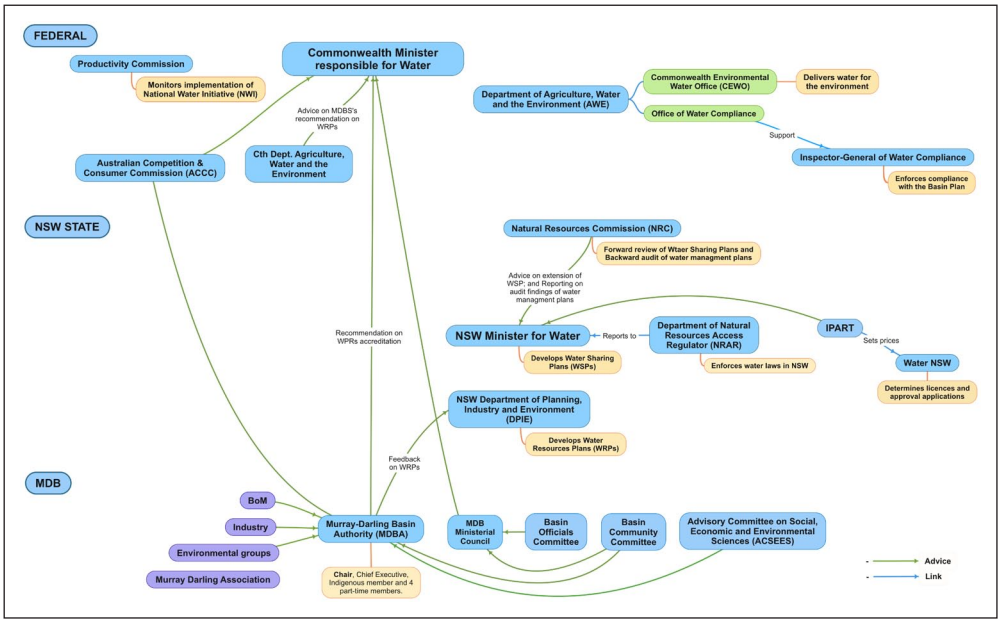

Figure 7. Institutional mapping of state water governance, New South Wales (NSW).
Source: The authors.

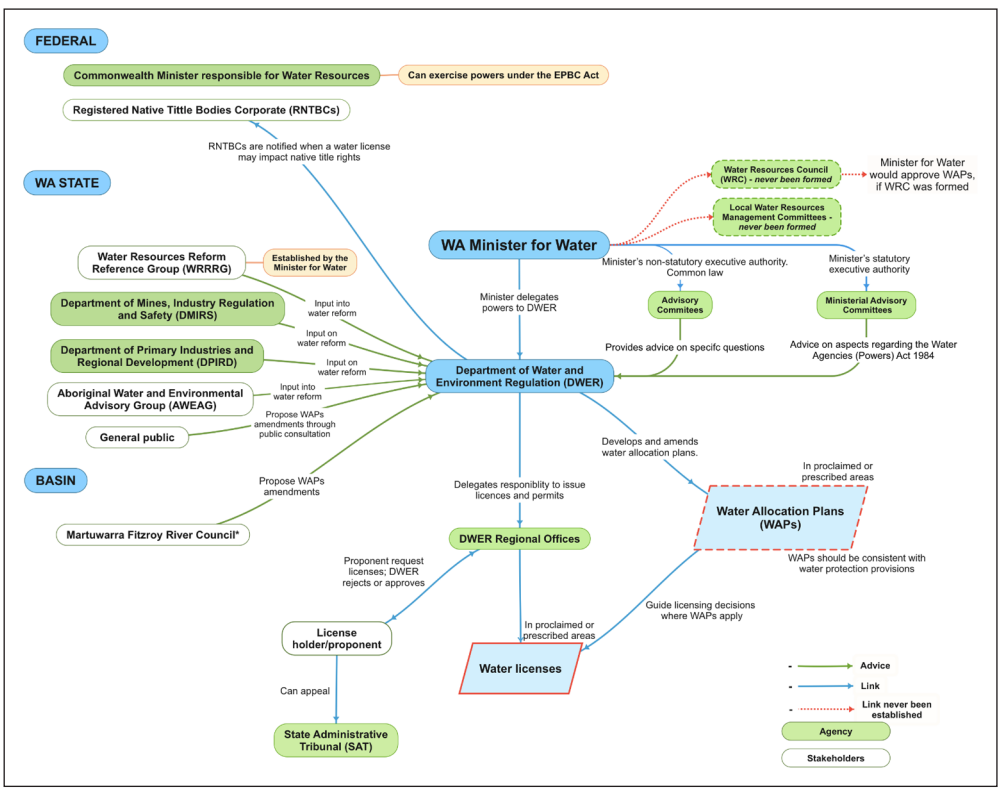

Figure 8. Institutional mapping of state water governance, Western Australia (WA).
Source: The authors.

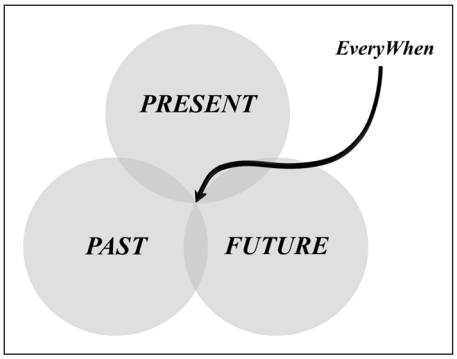

Figure 9. The concept of 'EveryWhen'.
Source: Adapted by the authors from Stanner (1979).

a focus on water sharing plans (WSPs) in NSW, water resources plans (WRPs) in the MDB, and water allocation plans (WAPs) in WA that we describe as settler law and institutions (see Glossary).

EveryWhen

Here, we highlight a crucial difference in terms of understanding place and time which separates settler and Indigenous understanding about Country and how the rivers are governed. Anthropologist Stanner (1979) explained the Aboriginal non-linear space-time concept of 'EveryWhen' (see Figure 9) that has no fixed moment. Instead, time is placed simultaneously in the past, present and future when all come together (Stanner, 1979). EveryWhen has been interpreted in relation to art as:

> *'. . .that Indigenous art and culture do not merely represent the time before time, but in fact awaken us to the fullness of it'* (Gilchrist, 2016: 30).

'Everywhere' is the ancestral memory of a river system, as told by its Indigenous Knowledge Holders, written into the land and water as art, song, story and ceremony. In the words of Barkandji Wiimbatja Nhuungku Elder, Elsie Jones, as displayed on the banks of Baaka at Wilcannia and witnessed on 19th April 2021 by the convening co-author:

> *'We do not exist only now, we are part of our past and part of our future and we are linked to our land'.*

EveryWhen and Everywhere connect time, space and storylines and allow multiple ontologies and knowledge systems to be considered with equanimity; a focal point where multiple possibilities converge. EveryWhen is visualised in the lino print, 'Iron Pole Bend', by the artist Elder Badger Bates (Figure 4). 'Iron Pole Bend' shows a coming together of multiple possibilities in an eternal and sacred form, depicting a special water place where the artist's ancestors fished for Murray cod and shows the vast intersecting relationships within Baaka Country; water connects the sky and stars and floodplains and river flows to come together through the *Ngatji* and the Dreamtime creatures of the brolga, kangaroo and goanna (Somerville, 2014).

'Iron Pole Bend' (Figure 4) shows the impacts of drought and over extraction of water in the disconnected moment where fish bones, dead mussels and empty yabby shells lie among broken lines of disconnected flow. At the intersection of the multiple lines in 'Iron Pole bend' is where we seek to provide connected pathways. These EveryWhen and Everywhere journeys are *local* in their

understandings of Country of the two rivers; *timeless* in that they bring together knowledges of the deep past stretching back tens of thousands of years; and *global* in our wish as tellers of this narrative.

Many Indigenous Peoples along Baaka and Martuwarra are working to overcome long-standing social, climate and water injustice. Leaders from these two river systems believe that justice and equity are fundamental to a 'right to life'. These possible pathways include the knowledges and the lived experiences of Elders (Bates, 2018; Poelina et al., 2021, 2022), academic studies (Grafton, 2019; Grafton et al., 2020), formal reviews (Australian Academy of Science, 2019; Productivity Commission, 2021; Walker, 2019) and proposals by Indigenous organisations (Baaka Water Commission, 2022; Nelson et al., 2018).

Contrasting governance for Baaka

Settler water law and institutions. In NSW, WSPs prescribe how water is managed and set the rules for water trading and water allocation among the various users. Under the *Water Management Act* (NSW, 2000), a WSP should give priority to environmental outcomes while supporting social and economic values (Natural Resources Commission, 2021). In a WSP area, water access licences (WALs) allow licence-holders to withdraw water up to a certain volume, within a specific area or source, under specific conditions (e.g. location, time or flow rate).

WSPs are, typically, in place for 10 years, at the end of which they may be extended by the Minister responsible for water. Decisions about a WSP must consider the advice of the Natural Resources Commission (NRC) of NSW, in accordance with the *Water Management Act* (NSW, 2000). In NSW, WSPs are one component of WRPs that are part of the Murray-Darling Basin Plan (hereafter Basin Plan). WRPs are legal instruments that establish the rules about how water is managed and shared at the catchment level, within the MDB. WRPs include overall limits on how much water can be abstracted for 'consumptive' uses and are developed by Basin state governments that are responsible for monitoring and compliance with such plans. The Murray-Darling Basin Authority (MDBA), established to oversee the *Water Act* (Australian Government, 2007), assesses each WRP and provides recommendations to the Federal Water Minister on their accreditation of WRPs under the Basin Plan.

Indigenous first law. Water reform from the Barkandji perspective:

> *'. . .starts by placing vulnerable communities and environments along Baaka at the forefront, while implementation entails a redesign of systems and processes to better meet their needs and improve outcomes along Baaka for all Baaka Water Community'.*

Such reform must include:

> *'Needs-based supports – wrap-around supports designed to target the needs of vulnerable Baaka Water Communities including Evidence-informed targeted interventions'* (Baaka Water Commission, 2022).

In terms of specific and immediate actions, Baaka Water Commission (Gooch and Ball, 2019), established by Barkandji Traditional Owners, seeks: (1) water planning to specify Aboriginal water-related values, objectives and outcomes; (2) Aboriginal water access licences in support of Barkandji cultural values; (3) Funding for Barkandji to be adequately supported and represented in water reforms; and (4) traineeships and employment for Barkandji in Country in terms of water metering and within the NSW department responsible for water management.

First Nations organisations, such as Murray Lower Darling Rivers Indigenous Nations (MLDRIN) and the Northern Basin Aboriginal Nations (NBAN), have proposed their own pathways towards water justice. MLDRIN was established in 1998 when Indigenous Nations along the Murray River came together to support the Yorta Yorta Nation in their pursuit of native title rights when it was resolved to develop a stronger voice for Indigenous Nations in water policy and management decisions. Indigenous aspirations for cultural values associated with their rivers and Country were later affirmed in the 2009 Echuca Declaration (Jackson and Moggridge, 2019; MLDRIN, 2009). The governance of MLDRIN is:

> *'. . .an expression of how the Indigenous Nations have always done business – by caring for Country and talking to traditional neighbours upstream and downstream on the Murray and its sister Rivers, Creeks, Lakes, Billabongs and waterways'.*

Both MLDRIN and NBAN play an important role engaging with State Governments, the MDBA, the Australian Government, Natural Resource Management (NRM) organisations, research institutions and environmental groups on a broader level about water policy and planning. MLDRIN advises member Nations on the technicalities of water management decision-making; provides updates about the implementation of the water plans and processes; and supports individuals and Indigenous Nations to build up waterway management expertise.

Central to changes proposed by MLDRIN and NBAN are water rights that give: 'First Nations more capacity to control their water, to fulfil responsibilities to Country, and to participate in water resources partnerships'. (Nelson et al., 2018: 6). In support of the core of water rights are revisions to laws in relation to land use planning, cultural heritage and the environment to support cultural values and 'Caring for Country' by First Nations. This would also require a transformation in all important water decision-making to embed voice and influence by First Nations in such planning processes.

A summary of the possible pathways for Baaka are provided in Table 1 under three themes: 'Aboriginal values, objectives, and outcomes', 'climate change and ecological values' and 'infrastructure and water governance'. The pathways in Table 1 are drawn from reports by the Murray-Darling Basin Royal Commission and the Australian Academy of Science, both published in 2019, and from the Productivity Commission in 2021, and a review of key findings of four government or scientific reviews (e.g. Grafton et al., 2020). Table 1 should be read *after* section 4 and its description of five journeys towards water justice for the two river systems.

Contrasting governance for Martuwarra

Settler water law and institutions. In WA, the Department of Water and Environmental Regulation (DWER) is responsible for water management and environmental protection. It develops WAPs, grants licences to access water resources and to construct wells, and issues permits for works that interfere with water courses. DWER performs these water resources management functions under the *Rights in Water and Irrigation Act* (Government of Western Australia, 1914; RiWI Act) and the *Rights in Water and Irrigation Regulations 2000* (RiWI Regulations). At the time of writing, a Water Reform Bill is being prepared in WA that is expected to consolidate six state water resources management Acts into one.

WAPs define objectives for the water management area, set an allocation limit for consumptive uses, and list licencing policies. They are developed by DWER with inputs from community, industry, PBCs and other government departments, such as the Department of Primary Industries

Table 1. Summary of themes, possible pathways and journeys towards water justice for Baaka and Martuwarra.

Themes	Possible Baaka Pathways	Possible Martuwarra Pathways
Aboriginal values, objectives, and outcomes	• Water planning should specifically include First Nations and explicitly account for their values, including cultural values and 'Caring for Country'. **[RECOGNITION OF FIRST LAW]** • Funding and capacity building are needed for better water management through Aboriginal stewardship. **[INTER-GENERATIONAL CARE]** • Importance of water rights for First Nations. **[INDIGENOUS WATER RIGHTS]** • 'Co-design a new NWI element dedicated to Aboriginal and Torres Strait Islander peoples' interests in water and involvement in water management' (Productivity Commission, 2021: 15). **[BRINGING TOGETHER KNOWLEDGES]** • 'Improve meaningful engagement with river-based communities, including Indigenous peoples' (Australian Academy of Science, 2019: 55). **[BRINGING TOGETHER KNOWLEDGES]** • 'Recognition of ignored and neglected voices must include restitution and a "fair share" of the water resources being directed to the First Peoples of the basin'. (Grafton et al., 2020: 20) **[BRINGING TOGETHER KNOWLEDGES, RECOGNITION OF FIRST LAW, INDIGENOUS WATER RIGHTS]**	• Water governance must recognise Indigenous cultural values (for example, identity, living waters) and include Native Title Holders. **[RECOGNITION OF FIRST LAW, INTER-GENERATIONAL CARE, BRINGINING TOGETHER KNOWLEDGES]** • An equitable and deliberative model is needed for water justice and must include the Free, Prior and Informed Consent principle. **[INTER-GENERATIONAL CARE, BRINGING TOGETHER KNOWLEDGES]** • Greater funding is needed to support regional water governance and their communities, including Indigenous knowledge holders. **[BRINGINING TOGETHER KNOWLEDGES]** • Importance of water rights for First Nations. **[INDIGENOUS WATER RIGHTS]**
Climate Change and Ecological values	• Need for greater protection, restoration and investigation of ecological values, especially at Menindee Lakes and Baaka. **[INTER-GENERATIONAL CARE]** • Importance of explicitly considering climate change, using the best available science, in water planning and need to implement the Precautionary Principle. • An urgent review of the risks of climate change to the MDB based on the best available science. • 'A fully resourced, scientific analysis. . . to ascertain the causes, effects and available ecological responses to the continued ecological decline of the Menindee Lakes and the Lower Darling' (Walker, 2019: 72). • 'A comprehensive Basin-wide environmental monitoring program. . .' (Walker, 2019: 74). • 'Enhance water planning provisions to better reflect current best practice and embed processes to better account for climate change including in relation to: dealing with extreme scenarios; water quality issues; rebalancing; modelling climate; and provisions for allocating risk'. (Productivity Commission, 2021: 14).	• Water allocations should be based on the precautionary principle. **[INTER-GENERATIONAL CARE]** • Impacts on groundwater (and their interconnection with surface water) should be carefully considered. **[BRINGINING TOGETHER KNOWLEDGES, INTER-GENERATIONAL CARE]** • Importance of explicitly considering climate change, using the best available science, in water planning and need to implement the Precautionary Principle. **[INTER-GENERATIONAL CARE]**

(Continued)

Table 1. (Continued)

Themes	Possible Baaka Pathways	Possible Martuwarra Pathways
	• 'Modernise the National Water Initiative goal by including references to climate change and Traditional Owners' (Productivity Commission, 2021: 14) • 'take urgent steps to ensure that there is sufficient flow—considering both quality and quantity of water—in the Darling River to prevent stratification and blue-green algal blooms' (Australian Academy of Science, 2019: 54). **[INTER-GENERATIONAL CARE]** • 'establish a Menindee Lakes restoration project, to determine sustainable management and operation of the lakes system and the Lower Darling and Darling Anabranch' (Australian Academy of Science, 2019: 54). **[INTER-GENERATIONAL CARE, BRINGINING TOGETHER KNOWLEDGES]**	
Infrastructure and water governance	• Infrastructure projects must respond to Traditional Owners' cultural interests and have costs recovered from users, as the norm. **[BRINGING TOGETHER KNOWLEDGES]** • Greater transparency is needed on water flows, metering, and reporting. • Need for infrastructure to be economically viable and ecologically sustainable. • Adoption and implementation of key water governance principles including First Law. **[RECOGNITION OF FIRST LAW]** • Setting of water extractions based on the best available science and in accordance with the federal *Water Act* (Australian Government, 2007) so as to ensure '. . .no "compromise" to the key environmental assets and ecosystem functions of the Basin — it must restore and protect those that are degraded' (Walker, 2019: 71). **[INTER-GENERATIONAL CARE]** • '. . .legislation to expressly recognise and authorise the taking and use of water in exercise of native title rights and interests, whatever they may be determined to be and without additional limitations'. (Walker, 2019: 74). • **[RECOGNITION OF FIRST LAW]** • Real-time monitoring and transparent publication of consumptive water use in the MDB. • 'Significantly enhance the environmental management and water accounting (system integrity)' (Productivity Commission, 2021: 14).	• Water co-governance with First Nations and consultation processes must be based on co-design with First Nations. **[RECOGNITION OF FIRST LAW, INTER-GENERATIONAL CARE, BRINGING TOGETHER OF KNOWLEDGES]** • Water metering and accounting are critically important to effective water planning. • Primacy of cultural, environmental, and sustainable outcomes over water extractions other than for town water supplies or stock and domestic use. **[RECOGNITION OF FIRST LAW, INTER-GENERATIONAL CARE, INDIGENOUS WATER RIGHTS, BRINGING TOGETHER KNOWLEDGES]**

(Continued)

Table 1. (Continued)

Themes	Possible Baaka Pathways	Possible Martuwarra Pathways
	• 'Restate the high-level requirement for all infrastructure to be assessed as economically viable and ecologically sustainable prior to the commitment of funding, with cost recovery from users the norm. . .infrastructure development processes are culturally responsive to Traditional Owners' interests to ensure deep engagement and, at a minimum, protection of cultural assets'. (Productivity Commission, 2021: 16). **[INTER-GENERATIONAL CARE, BRINGING TOGETHER KNOWLEDGES]** • 'Improve the health of the Darling River, through adequate and effective planning which is scientifically informed' (Australian Academy of Science, 2019: 55). • '. . .prioritise measuring the "what, how, when and who" of water in terms of the MDB so that there is transparency about inflows, extractions, consumption (evapotranspiration), storage (including privately owned) and return flows of water within the MDB' (Grafton et al., 2020: 19).	

Source: The authors.
Notes:
[1].Where relevant, Journeys, as created at the 25th May 2022 dialogue, are descriptors for the possible pathways and presented as [CAPITALISED LETTERS].

and Regional Development (DPIRD) and Department of Mines, Industry Regulation and Safety (DMIRS). Although the *RiWI Act* provides for WAPs, with the legal status of mandatory relevant considerations in the performance of licencing and permitting, all WAPs to date have been non-statutory. This is because the *Water Agencies (Powers) Act* (Government of Western Australia, 1984) gives powers to the responsible WA Minister to appoint a Water Resources Council (WRC), but the WRC has not yet been established.

The *RiWI Act* provides for two levels of water resources management. This includes a state-wide code of basic landholder rights to 'take and use' surface and groundwater for stock and domestic purposes, and for other uses that do not sensibly diminish the surface water resources in areas that are not subject to licencing. Where more intensive regulation is required, such as for mining, the WA Government declares a 'proclaimed or prescribed area' for surface or groundwater and regulates commercial use of water resources by licencing the taking and use of them. Consistent with the *Native Title Act* (Australian Government, 1993), DWER must notify the native title holders via the RNTBCs if a licence application may impact native title rights and interests. The proposed activities may also need to be assessed for environmental impacts under the *Environmental Protection Act* (Western Australian Government, 1986).

Within this legislative context, little scope is given for decision-making by Aboriginal Traditional Owners. Comments on licences or WAPs by Traditional Owners should be considered by the DWER, but the decision-making authority remains with the Minister responsible for water or departmental delegate of the Minister. There is no legal mechanism for joint decision-making by neighbouring RNTBCs native title. In Martuwarra catchment, the Martuwarra Council has been

formed by Traditional Owners to consider catchment scale water governance. The Martuwarra Council submitted to the WA government that it be the point of contact on behalf of Traditional Owners of Martuwarra and for major state government initiatives (RiverOfLife et al., 2021b). DWER continues to advance water reform with advice from the Water Resources Reform Reference Group (WRRRG) and, more recently, the Aboriginal Water and Environmental Advisory Group (CAWI).

Indigenous first law. In contrast to WA state water management, the Martuwarra Council developed a *Martuwarra Fitzroy River Catchment Estate Conservation and Management Plan* (RiverOfLife et al., 2020b) that provides pathways towards preferred futures for sustaining cultural and ecosystem values, and improved livelihood outcomes for the Indigenous peoples of Australia. This Management Plan lays out positions for recognising Indigenous cultural values and including native title holders in water governance. Further, the Management Plan outlines a strategic approach to the conservation and management of Martuwarra and articulates the planning principles, key initiatives and aspirations of Martuwarra Traditional Owners to protect their culture, identity and deep connection to living waters and land.

The Martuwarra Council seeks to further develop equitable and deliberative models of co-governance for water and catchments. In a response to the 2020 WA government's development options for Martuwarra, 57 recommendations were provided by the Martuwarra Council and its partners on the preferred pathways for future development of the river (RiverOfLife et al., 2021b). Some of its key recommendations were: (1) a commitment by the WA government '. . .to the principle of Free, Prior and Informed Consent as the basis for all consultation processes and all substantive policy and legal reforms (including co-design of the governance model)' (RiverOfLife et al., 2021b: 7); (2) the WA government provide '. . .opportunities for consultation that are accessible to all and timeframes that allow all people to be able to participate' (RiverOfLife et al., 2021b: 7); (3) the WA government '. . .acknowledge impacts of Aboriginal water dispossession and commit to reversing Aboriginal water dispossession by working with the Martuwarra Council (and other Traditional Owners) to co-design Martuwarra governance model' (RiverOfLife et al., 2021b: 8); (4) the importance of '. . .best available climate change information to guide water planning' (RiverOfLife et al., 2021b: 8); (5) 'All [water] diversions (including floodplain harvesting) must be accounted for and integrated into water management processes for the catchment, including through appropriate measurement, licencing, and incorporation into water accounting, and hydrological and climate modelling' (RiverOfLife et al., 2021b: 9–10); (6) the need to 'Adopt a precautionary principle approach to all water allocations, recognising a sustainable allocation will not be able to be determined on a system-wide basis in the absence of longitudinal ecological data and groundwater and surface water connections, and to address the need for conservative baselines and ongoing monitoring' (RiverOfLife et al., 2021b: 10); and (7) the requirement that 'All water extractions, with the exception of town water supplies and for stock, Indigenous communities and domestic use, should be treated as a residual. Then, only after defined cultural, environmental and sustainable outcomes are achieved, should water extractions be permitted' (RiverOfLife et al., 2021b: 11). A summary of these possible pathways under three themes: 'Aboriginal values, objectives, and outcomes', 'climate change and ecological values' and 'infrastructure and water governance' is included in Table 1 and should be read *after* section 4.

Journeys for Baaka and Martuwarra

The one-day co-authors' dialogue in Broome on 25th May 2022 was collaborative and focussed on transformational changes in pursuit of water justice by considering the concept of 'place' and

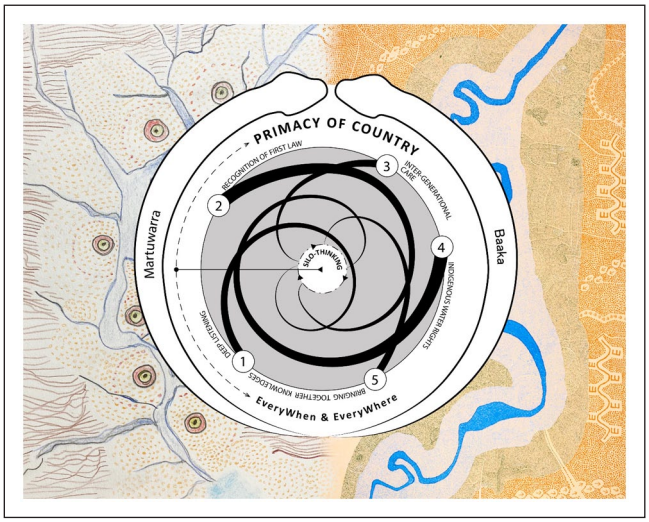

Figure 10. Flows of Water Justice.
Source: the authors with artwork supplied by Glenn Loughrey and final design by Dan Schulz.

'time' as embodied in 'EveryWhen' and 'Everywhere'. The one-day dialogue was convened by the Water Justice Hub and began with an initial figure, developed on the day of the dialogue, of journeys that participants believed supported water justice.

All participants in the one-day dialogue agreed the desired figure needed to embody the concepts of EveryWhen and Everywhere and be a triptych (see Figure 10) that included: (a) journeys towards water justice that incorporated the two river systems, as represented by connected Rainbow Serpents, one for each river system, encompassing the primacy of Country to which multiple and emergent journeys come towards and away from siloed thinking; (b) a sketch by artist Glenn Loughrey (Wiradjhuri), and co-author, of Martuwarra informed by both the Dialogue and a meeting with Elders and members of the Martuwarra Council; and (c) a painting of Baaka by Glenn Loughrey that he originally sketched in a visit to Baaka with some members of the WJH in April 2021.

Figure 10, 'Flows of Water Justice', connects the voices of the two river systems and expresses the ways of understanding the two living systems. This is visualised by two Rainbow Serpents connecting and represented by two paintings, from left to right, of Martuwarra and Baaka and their coming together in space and time. This highlights the importance of actions that we call 'journeys' to protect and restore landscapes, and to amplify voice of Traditional Owners; uniting all people to protect and restore Country. Thus, 'Primacy of Country' sits above all and is connected to both the past and future of Country.

The outer text in 'Flows of Water Justice' (Figure 10) provides the link between what is and what could be and are in juxtaposition to what participants viewed as 'silo thinking' that fails to listen to Country and that does not consider all voices. Participants at the Dialogue collectively considered and agreed to five complementary journeys, in no priority, as representations of action-oriented processes in support of 'Primacy of Country'. The 'five journeys' were not intended to be exhaustive, but all were considered necessary. The five journeys in the figure included: (1) 'Deep Listening' (Ungunmerr, 2015); (2) Recognition of First Law and Custodianship; (3) Intergenerational Care that links the past to the present and to the future; (4) Indigenous Water Rights; and (5) Bringing Together Different Knowledges. All participants agreed that the sequencing,

specifics and how this would be implemented must be determined by communities themselves, supported by governments and civil society, actively seeking journeys towards water justice.

The five journeys provide a lens for assessing existing and proposed pathways in support of water justice for Baaka and Martuwarra in Table 1 compiled for the two river systems (see section 3). All possible pathways in Table 1 were evaluated as to whether they are descriptive of one or more of the five journeys, and which may include multiple pathways, in the 'Flows of Water Justice' (See Figure 10). Under the grouping 'Aboriginal values, objectives, and outcomes' all possible pathways connect to at least one of the five journeys and most pathways for the grouping 'Infrastructure and water governance' for both river systems connect to at least one of the five journeys. By comparison, at least for Baaka, in relation to the grouping 'Climate Change and Ecological Values' several possible pathways do not connect to any of the five journeys.

None of the possible pathways in any of the groups of pathways in Table 1, for either of the two river systems, connects to the journey 'Deep Listening' which requires decision-makers to spend time on and to listen to Country. The journeys that connect to the most possible pathways are Bringing Together Knowledges (six pathways each for Baaka and Martuwarra); Inter-Generational Care (six pathways for Baaka and seven for Martuwarra); Recognition of First Law (three pathways each for Baaka and Martuwarra); and Indigenous Water Rights (two pathways for Baaka and one for Martuwarra). The connection of the one-day dialogue journeys to proposed pathways for Baaka and Martuwarra illustrate a need to reconsider actions in support of water justice for the two river systems to ensure Indigenous knowledge is core to water allocations and is prioritised in 'good faith' collaborative knowledge processes (Austin et al., 2019).

Conclusions

The world is at a crossroads and desperately needs journeys towards a sustainable and just water future. Without transformational change in thinking and actions, water crises will worsen because of climate change; the need for rising food production; rapidly rising incomes that increase water consumption; water governance failures; and inequality, among other factors. Within this challenging and contested space, and in support of transformational change, we bring together different knowledges, understanding and the wisdom of two Australian river systems (Baaka and Martuwarra) and their Traditional Custodians, developed over tens of thousands of years.

Learning from the art of river custodians and other artists, we listened to and connected two ancient river systems in one continent, Australia, in a narrative we call 'A Tale of Two Rivers' that is based on Traditional storytelling and the Narrative Research Approach. We drew upon Indigenous knowledges and the concept of EveryWhen and Everywhere to provide ways of understanding that includes (1) bio-physical understanding of the two river systems; (2) Indigenous custodianship and voices of the rivers; and (3) art of the two river systems. Of these, the art was pivotal to developing shared understandings of the two river systems and across different knowledges.

At a one-day Dialogue on 25th May 2022 participants, as co-authors, created a visualisation of the meeting of the two river systems based on Indigenous and other knowledge. This figure adopted a circular framing of time whereby the past, present and future connect in relation to Country. Participants placed a 'Primacy of Country' above all else in relation to the two river systems. Five journeys were highlighted towards achieving Primacy of Country for the two rivers: (1) 'Deep Listening' to Voices of the Rivers; (2) Recognition of First Law and Custodianship; (3) Inter-generational Care; (4) Indigenous Water Rights; and (5) Bringing Together Different Knowledges. These five journeys were used as a lens to map existing and proposed pathways for the two river systems.

Our dialogic process of bringing together different knowledges and places, with art as the connector, is in support of water justice for the two river systems. The success (or otherwise) of this

process, in terms of outcomes, will require time to discern. Nevertheless, and in responses to the poor and declining state of many of the world's rivers, our process brought together Indigenous knowledge and other knowledge to both listen and to see and to create journeys to ensure healthy river systems. In our view, the process of creating 'A Tale of Two Rivers' has brought closer two ancient and living river systems, Baaka and Martuwarra, and has helped transform the thinking of all co-authors. This is a small step towards water justice and is a tale worth telling.

Author's note

This manuscript is dedicated to and written on behalf of two ancient and living river systems, Baaka and Martuwarra.

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Glossary

Aboriginal Tenure: Indigenous-specific forms of land tenure, primarily tenure recognised under the Native Title Act 1993 (Cth).

Balginjirr: the traditional and contemporary name for the Nyikina sacred site prior to colonisation, also known as Lower Liveringa.

Blackfellas: A non-pejorative term that refers to Australia's Indigenous peoples.

Country: Indigenous Australians recognise Country as animate, as agency and relational, spelt as a proper noun (Country et al., 2015; Kwaymullina, 2005; Poelina, 2019). Country is an Indigenous understanding and responsibility towards land, water, and sky, and everything in it and across time. Connection to Country to Indigenous Australians is a deep spiritual bond with the perception that Country is as a living kin such that

place is alive and communicative between human and non-human and is the source of life, identity, and culture (Janke et al., 2021: 14–17).

Cultural Heritage: the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts, and cultural spaces associated therewith – of communities, groups and, in some cases, individuals. Cultural heritage is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity (UNESCO, 2022).

Cultural Values of Water: Indigenous peoples' diverse values for water according to their specific ontological frameworks and intellectual traditions. Other interpretations exist depending on context and can refer to cultural values held by non-Indigenous people (Jackson, 2006).

Environmental Values of Water: Human values determined primarily by hydrological or ecological characteristics of water rather than spiritual or religious values.

EveryWhen: A conceptualisation of time that is non-linear and cyclical and where past, present, and future are all connected with Country (Yunkaporta, 2019).

Everywhere: The ancestral memory of a river system, as told by its Indigenous Knowledge Holders, written into the land and water as art, song, story, and ceremony

First Law: also known as customary law, is the law of the land and living water systems. It is upheld through stories, song, dance, and ceremony (Black, 2010; Redvers et al., 2020; Turner and Neale, 2015).

Indigenous Custodianship: the custodial obligations (rather than 'ownership') that Indigenous people have to their Country (Yunkaporta, 2019).

Indigenous Water Rights: Rights that Indigenous peoples have to their waters (and lands) as per the human rights standards described in UNDRIP (Jackson, 2016; Robison et al., 2017; United Nations General Assembly, 2007).

Inter-generational Care: an approach based on reciprocal learning/knowledge transfer between young and old generations (Poelina et al., 2022).

Jila: A cultural site identified with Living Waters.

Living Waters: Reference to water places that hold the living energy which animates Country, for example 'Oongkoor' in the Nyikina language (Milgin et al., 2020).

Murray Lower Darling Rivers Indigenous Nations (MLDRIN): a confederation of sovereign First Nations from the southern part of the Murray–Darling Basin.

Native Title Holders: person, people, or body corporate who hold native title rights and interests as per the Native Title Act 1993 (Cth).

Northern Basin Aboriginal Nations (NBAN): a confederation of sovereign First Nations from the northern part of the Murray-Darling Basin.

Ngatji: Barkandji traditional name for the Rainbow Serpent.

Primacy of Country: The 'Primacy of Country', highlighted in Figure 'Flows of Water Justice' (Figure 10), derives its meaning through Indigenous Australian philosophy and practice where the capitalisation of Country accords respect, recognising broader than normal English language uses. Country is alive, communicative, between humans and non-humans as kin. A relationship of shared values, ethics, and virtues requires two-way dialogue, and the physical act of dreaming, ceremony, dance, song, and sometimes tears (Milgin et al., 2020; Salmon, 2000).

Rainbow Serpent: First Nations people use the metaphor Rainbow Serpent to describe the generic ancestral serpent responsible for creating and sustaining waterways.

Relational Values: preferences, principles, and virtues about human-nature relationships (Chan et al., 2016).

River: Martuwarra guardians recognise 'River' as animate, as agency and relational. A proper noun.

Settler Law: Following the colonisation of Australia by the United Kingdom in 1788, a new legal regime was imposed that included English common law and criminal law under the false claim that Australia was not inhabited by a people with recognisable institutions and laws. English law was established over all matters, including the First Nations of Australia, in a legal precedent by the Full Court of New South Wales in 1836 with *R v Jack Congo Murrell*. This legal precedent formally established that Indigenous Australians were subject to criminal jurisdiction in settlers' courts and subject to English law (Australian Law Reform Commission, 2010; Douglas and Finnane, 2012).

Songlines: stories that connect places of knowledge that are embedded in Country. Indigenous people still travel in Country along songlines, learning through song, story, dance, art, and ceremony (Neale and Kelly, 2020).

Spirit of Water: the animate lifeforce of water (Milgin et al., 2020).

Traditional Custodian: See Traditional Owner.

Traditional Owner: a broad term used to describe First Nations people, native title holders (& under the Aboriginal Land Rights Act (Northern Territory Act, Australian Government, 1978; the Aboriginal Lands Trust)), guardians and custodians of their traditional lands and waters.

Martuwarra: the Fitzroy River ancestral serpent beings are known to other Martuwarra Nations as *Galbardu*, *Kurrpurrngu*, *Mangunampi*, *Paliyarra* and *Kurungal*.

Voices of the Rivers: We conceptualise the Rivers, as part of Country, as living entities with agency, to which all of us owe an ethic of care. In referring to 'voices', we invite the reader to view the river systems as subjects (rather than objects) and to consider what water justice means from the perspective of the Rivers themselves (Country et al., 2015; RiverOfLife et al., 2021a)

Water injustice: Both a process and a set of outcomes that fail to deliver water justice.

Water justice: A process of human struggle for transformational changes in relation to water; how it is used, what it is valued for, and who has voice and decision-making authority over how water is allocated over place and time. Water justice, beyond the Human Right to water, requires: (1) recognition of marginalised communities and their inalienable rights; (2) representation of marginalised communities at temporal and spatial scales; (3) redistribution or restorative justice; (4) epistemic justice that values all knowledges and experiences; and (5) encompasses justice for waters itself (Gupta et al., 2023; Jackson, 2018; McGregor, 2013; Sultana, 2018; Sultana and Loftus, 2019).

Whitefellas A non-pejorative term that refers to Australia's non-Indigenous peoples of European descent.

Woonyoomboo: Woonyoomboo made Martuwarra, starting his journey from the mouth of Martuwarra, called Muroolmurool. There are many dreaming stories associated with Woonyoomboo.

Yabbies: An Australian species of small freshwater crayfish.

Yoongoorrookoo: Nyikina traditional name for the sacred ancestral serpent who created Martuwarra from the mouth of the River to the Upper Nyikina boundary at Noonkanbah.

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