

## ORIGINAL ARTICLE OPEN ACCESS

# Aboriginal and Torres Strait Islander Perspectives in Drinking Water Policy: A Realist Review

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**Received:** 21 September 2024 | **Revised:** 20 January 2025 | **Accepted:** 5 March 2025

**Funding:** This work was supported by Macquarie University and the University of New South Wales.

**Keywords:** Aboriginal and Torres Strait Islander Peoples | drinking water | policy | policymaker policymaking | realist

## ABSTRACT

Aboriginal and Torres Strait Islander cultures have a deep, enduring connection to water. However, since Australia's colonisation in 1788, water management has shifted, creating ongoing issues for these communities. Notwithstanding the universal recognition of safe drinking water as a human right, significant inequities persist, particularly affecting Aboriginal and Torres Strait Islander peoples. Excluding Indigenous knowledge systems from drinking water policy design has exacerbated these issues. Contemporary discourse acknowledges the importance of integrating Indigenous knowledge into drinking water policy. Yet, the extent of Aboriginal and Torres Strait Islander influence on current drinking water policy remains unclear. Our realist review addresses two questions: (1) What evidence supports engaging Aboriginal and Torres Strait Islander peoples in drinking water policy design at macro, meso and micro levels? (2) What contextual factors and mechanisms influence this engagement? We systematically searched electronic databases and grey literature, resulting in five peer-reviewed studies and 33 grey literature sources. Our findings suggest that addressing complex water issues requires significant and permanent investment in Aboriginal and Torres Strait Islander governance and self-determination in policy design, implementation and evaluation. We propose a roadmap highlighting enablers and barriers, noting that future research should explore capacity-building for Indigenous water operators and decision-makers.

## 1 | Introduction

The fabric of Aboriginal and Torres Strait Islander culture weaves an unbroken bond with water, extending back more than 60,000 years (Marshall 2017). Through the ages, water has held a sacred place in the cultural identity of Aboriginal and Torres Strait Islander peoples. Yet, since colonisation, access to clean drinking water in Australia has remained a highly contentious issue (Moggridge, Thompson, et al. 2022b; Water

Services Association of Australia 2022). This contention is notably accentuated by the exclusion of Aboriginal and Torres Strait Islander peoples in drinking water policy design and implementation (Moggridge 2021; Water Services Association of Australia 2022) and the complex interplay of responsibilities among local, state/territory and national governments (Wheeler et al. 2024). Similarly, Canadian Indigenous communities also face significant drinking water quality challenges, highlighting the need for increased investment in research consultation to

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shape better drinking water policies for Indigenous communities (Bradford et al. 2016).

Under Article 11(1) of the United Nation's International Covenant on Economic, Social and Cultural Rights, access to safe drinking water is a human right (UN 1966). However, in Australia, inequities persist in safe drinking water access. This is particularly evident for Aboriginal and Torres Strait Islander peoples, who face significant injustices in accessing clean and reliable water sources (Perry et al. 2022). Historically, colonisation and the imposition of Western water management systems have disrupted Indigenous water practices and contributed to ongoing inequities in drinking water access and quality. Despite efforts to address these disparities through various policy interventions and initiatives (Moggridge 2021), the extent to which Aboriginal and Torres Strait Islander peoples' knowledges, experiences and rights are considered in current safe drinking water policy remains unclear.

A comprehensive understanding of how Aboriginal and Torres Strait Islander perspectives are integrated into drinking water policy frameworks is essential to promoting equitable access to safe drinking water for Aboriginal and Torres Strait Islander peoples and all Australians.

The Australian Government Productivity Commission's review of the National Agreement on Closing the Gap 2024 (Commission 2024b) urges governments to intensify their efforts in fulfilling their commitments to the Agreement's four priority reforms (Coalition of Aboriginal and Torres Strait Islander Peak Organisations 2020). The Agreement's first priority reform requires governments to recognise the significant value Aboriginal and Torres Strait Islander peoples can bring to policy design and implementation by engaging in early and ongoing shared decision-making with Aboriginal and Torres Strait Islander communities. It also emphasises the need for investment in Aboriginal and Torres Strait Islander-led approaches to achieving meaningful and lasting improvements in health, education, economic and social outcomes for Aboriginal and Torres Strait Islander peoples (Stefanelli et al. 2017).

Our paper explores how Indigenous ways of knowing, being and doing are integrated in Australian drinking water policy design. In recent years, there has been increasing recognition of the importance of centring Indigenous knowledge systems and perspectives into natural resource management policies, including those related to water governance. For instance, Stefanelli et al. explored the integration of Indigenous (Canadian and Australian) and Western knowledge systems in water research and management (Stefanelli et al. 2017). They found that community-based participatory research, along with fostering mutual trust and community ownership, is crucial in integrating Indigenous and Western knowledge systems to improve water management. Jackson and Altman (2009) also emphasise the imperative for Aboriginal governance in water policy and management, particularly in North Australia (Jackson and Altman 2009). The Committee on Aboriginal and Torres Strait Islander Water Interests (CAWI) (Australian Government Department of Climate Change 2024) is a national advisory body that exemplifies Indigenous governance. The CAWI is supported by the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) to advise '...the National

*Water Reform Committee (NWRC); and separately the Australian Government, and Water and Murray-Darling Basin Ministers Council, on Aboriginal and Torres Strait Islander Water Interests'* (Australian Government Department of Climate Change 2024). The CAWI comprises Aboriginal and Torres Strait Islander peoples that are appointed on their expertise in Indigenous water management. One of the CAWI's key principles is ensuring ongoing access to clean and safe drinking water. This involves recognising Aboriginal and Torres Strait Islander peoples' values in water management policies, laws and decisions about data ownership (Interests 2023). Jaravani et al. (2016) research supports CAWI's approach by highlighting the importance of incorporating Aboriginal views on drinking water quality and acceptability to formulate effective water policies (Jaravani et al. 2016). However, the extent to which Aboriginal and Torres Strait Islander peoples' knowledges and experiences are considered in current safe drinking water policy in Australia remains an area of inquiry. Through a comprehensive synthesis of existing literature and policy documents, this review contributes to a deeper understanding of how Aboriginal and Torres Strait Islander voices are represented and valued in efforts to address water quality injustices in Australia.

Our paper's objective is to critically examine the integration of Indigenous knowledge systems and experiences within current drinking water policy in Australia through a realist review approach. We adopt a realist approach Pawson and Tilley, (1997) to map the landscape of national, state and four examples of local (urban, regional and rural/remote) drinking water policies to elucidate the contexts, mechanisms and outcomes for engaging Aboriginal and Torres Strait Islander peoples in policy design. We explicate realist principles and detail the methodology used for our literature search, selection and assessment. We present the synthesised findings and their policy implications. Finally, the paper concludes with a summary of key insights and future research recommendations.

## 2 | Methods

### 2.1 | Terminology

Aboriginal and Torres Strait Islander peoples: the first peoples of Australia, meaning they were here for tens of thousands of years before Australia's colonisation in 1788 (Studies 2022).

Policy: 'A publicly available statement of intent or expected practice that is not negotiable and requires mandatory compliance (with consequences if not complied with)' (Christie et al. 2023).

Safe drinking water: in Australia, safe drinking water meets specific quality standards outlined in the National Health and Medical Research Council's Australian Drinking Water Guidelines (Australia 2021).

### 2.2 | Research Question

Our paper sets out to answer the realist questions:

1. what is the evidence for engaging Aboriginal and Torres Strait Islander peoples in designing drinking water policy?

2. what contextual factors and mechanisms (enablers and barriers) of engaging with Aboriginal and Torres Strait Islander peoples are associated with drinking water policy at macro, meso and micro-system levels?

### 2.3 | Indigenous Governance

Our study acknowledges and respects Aboriginal and Torres Strait Islander peoples' self-determination and sovereignty. Our research team comprises Aboriginal and Torres Strait Islander Elders and Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander policymakers and researchers from the Djurali Centre for Aboriginal and Torres Strait Islander Health Research and Education (Djurali) and Co-design Brains Trust (CBT). While Djurali guides and provides Aboriginal governance (Institute 2023) for our study, the CBT provides cultural expertise throughout this study. The CBT is a small group of Aboriginal and Torres Strait Islander peoples with research, policymaking and co-design expertise (Fono et al. 2024). Djurali and the CBT members embed Indigenous knowledge systems, perspectives and priorities in this study's design and data collection, analysis, findings and manuscript development. This study is also implemented in accordance with AIATSIS' ethics (#REC-0161) and Djurali's Research and Education Group Research Advisory Panel approval.

### 2.4 | Yarning

Following the Rambaldini collective impact methodology, we employed yarning to gather, analyse and interpret our data (Gwynne et al. 2022). Yarning is an Indigenous research method for collecting data with and for Aboriginal and Torres Strait Islander peoples in Australia (Kennedy et al. 2022). To enable respectful narrative exchange and deepen our collective understanding of this research, we undertook collaborative yarning and research yarning (Bessarab and Ng'andu 2010) via yarning circles. Our yarning circles respectfully engaged our Co-design brains trust (CBT), which included Aboriginal and Torres Strait Islander researchers, Elders and policymakers, throughout our study. Our regular yarning circles prioritised Aboriginal and Torres Strait Islander ways of knowing, being and doing in our data collection, analysis and interpretation. Also, our collaborative yarning recognised Aboriginal and Torres Strait Islander knowledge systems by ensuring Aboriginal and Torres Strait Islander research team members' voices were privileged throughout each stage of our study.

### 2.5 | Realist Approach

A realist approach underpins our aim to investigate the contextual factors and underlying mechanisms shaping outcomes in drinking water policy concerning Aboriginal and Torres Strait Islander peoples. Realist reviews are grounded in realist philosophy and seek to understand how and why complex interventions work in specific contexts by examining the underlying mechanisms and contextual factors (Pawson et al. 2005). We adopted this method to provide a nuanced understanding of the complex interplay between cultural,

social and environmental factors influencing the integration of Aboriginal and Torres Strait Islander knowledges in drinking water policy. Our realist review generated context-mechanism-outcome (CMO) configurations to inform a programme theory (Kent and Ajjaw 2022) to understand if and to what extent various facets of safe drinking water policy in Australia accommodate Indigenous perspectives. Our programme theory identified the necessary conditions (i.e., contextual factors and mechanisms) for how Indigenous knowledges are woven into drinking water policy design, should such instances exist. Further, our programme theory deepened our understanding of the impact of drinking water policies that integrate Aboriginal and Torres Strait Islander perspectives. The advantages of this approach include its ability to integrate diverse types of evidence, offer context-specific insights and develop explanatory theories that inform policy and practice (Pearsons et al. 2022). However, potential limitations include the complexity of distinguishing between mechanisms and contextual factors within policy development. To overcome this limitation, our collaborative yarning and yarning circles fostered open dialogue and mutual understanding among our research team, facilitating consensus on data synthesis and interpretation.

### 2.6 | Search Strategy

1. We compiled a search strategy with MeSH terms and keyword phrases including 'Aboriginal and Torres Strait Islander peoples', 'Australia', 'safe drinking water' and 'policy'. We used the following search strings: ('drink\* water') AND ('Indigenous' OR 'Aborigin\*' OR 'Torres Strait Island\*' OR 'Aboriginal and Torres Strait Islander' OR 'First Peoples') AND ('Australia\*') AND ('polic\*' or 'govern\*' or 'legislat\*' or 'framework\*' or 'strateg\*' or 'roadmap' or 'act' or 'regulat\*' or 'plan'). Our search strings were refined based on initial obtained results.
2. We searched electronic databases and grey literature sources in May 2024. We systematically searched the following electronic databases: PubMed, Medline, Embase, Scopus, Web of Science, Academic search premier, Indigenous Studies (AIATSIS) and Google Scholar. We searched for grey literature in the form of downloadable policy documents, reports and white papers from Analysis and Policy Observatory, Indigenous HealthInfoNet, CSIRO, and relevant national, state and local water governing websites.

### 2.7 | Eligibility Criteria

Our inclusion criteria were as follows:

1. geography: literature focusing on drinking water policy in Australia,
2. population: literature describing ways that Aboriginal and Torres Strait Islander perspectives are integrated in drinking water policy,
3. policy: literature pertaining to government drinking water policies (in alignment with our definition of policy),

4. study type: literature involving qualitative and quantitative research methodologies, to provide a comprehensive understanding of the topic,
5. recency: current drinking water policies (i.e., not superseded by new policy), to ensure relevance and currency of findings and
6. accountability: literature linked to accountability mechanisms (e.g., regulation).

Our exclusion criteria were as follows:

1. geography: literature with a non-Australian focus,
2. population: literature with no reference to Aboriginal and Torres Strait Islander peoples,
3. irrelevance: literature focusing on outdated or superseded drinking water policy,
4. non-English: literature published in languages other than English, unless translations are readily available or deemed essential for inclusion and
5. duplicate studies: multiple versions of the same study or redundant publications on the same topic.

## 2.8 | Screening and Selection

Author 1 was assisted by a university librarian in conducting the initial searches using the search strategy detailed above. Results were exported to EndNote to manage references (including

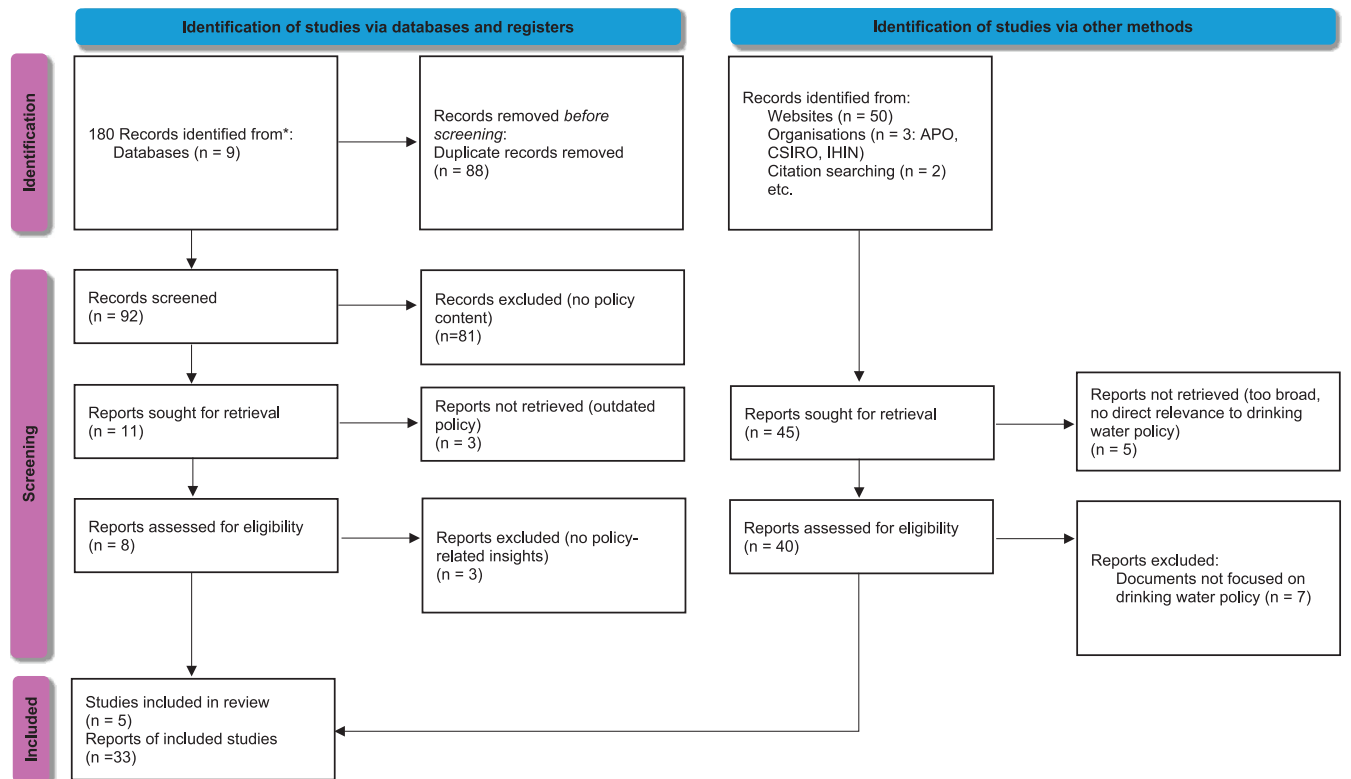
de-duplication). Authors 1–3 reviewed article titles and abstracts to determine relevance based on eligibility criteria. Articles that met the inclusion criteria were included, and irrelevant articles were excluded with reasons documented. Author 2 resolved any discrepancies. Authors 1–3 reviewed the full texts of included articles to confirm relevance. Our PRISMA diagram in **Figure 1** details our systematic study selection process, including the number of studies identified, screened, assessed for eligibility and included in our analysis.

## 2.9 | Data Extraction

Author 1 extracted key data from included articles, including literature aim, methods, findings and policy implications. Extracted data were verified by Authors 2–6 and 9 to ensure consistency and accuracy, and outlined in Table 1.

## 2.10 | Quality Assessment of Peer-Reviewed Academic Studies

We intended to use the Centre of Research Excellence in Aboriginal Chronic Disease Knowledge Translation and Exchange's (CREATE) Aboriginal and Torres Strait Islander Quality Appraisal Tool to assess the included studies. However, the study characteristics did not align with CREATE's assessment criteria, which determine research quality based on how the research prioritises the voices of, considers, includes and benefits Aboriginal and Torres Strait Islander peoples (Harfield et al. 2020). Four of the five included studies were



**FIGURE 1** | PRISMA flow diagram.

**TABLE 1** | Studies and reports characteristics.

Evidence type	#	Author, year	Title	System level
Peer-reviewed studies ( <i>n</i> = 5)	1	Balasooriya et al. 2023 <sup>24</sup>	A review of drinking water quality issues in remote and indigenous communities in rich nations with special emphasis on Australia	Macro
	2	Howey & Greal, 2021 <sup>25</sup>	Drinking water security: the neglected dimension of Australian water reform	Meso (Northern Territory)
	3	Wyrwoll et al., 2022 <sup>23</sup>	Measuring the gaps in drinking water quality and policy across regional and remote Australia	Macro
	4	Vanweydeveld & Water Services Association of Australia (2022) <sup>4</sup>	Closing the water for people and communities gap: improving water services to Aboriginal and Torres Strait Islander remote communities	Macro
	5	Moggridge & Thompson, 2021 <sup>42</sup>	Cultural value of water and western water management: an Australian Indigenous perspective	Macro, Meso, Micro
Government documents ( <i>n</i> = 24)	1	Australian Government National Health and Medical Research Council, 2011 <sup>14</sup>	Australian Drinking Water Guidelines	Australian Drinking Water Guidelines
	2	Australian Government Productivity Commission, (2024) <sup>26</sup>	National Water Reform 2024	Macro
	3	Commonwealth Scientific and Industrial Research Organisation (CSIRO), 2023 <sup>43</sup>	Water supply for remote Australian communities. Water quality review and treatment technology framework for remote community water supply	Micro
	4	Green, Moggridge and Australian Government Department of Environment and Energy (2024) <sup>44</sup>	Australia State of the Environment 2024	Macro
	5	Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024) <sup>45</sup>	First Nations water policy	Macro
	6	DCCEEW (2024) <sup>10</sup>	Committee on Aboriginal and Torres Strait Islander Water Interests Insights Paper	Macro, Meso
	7	Australian Government Department of Environment and Energy (2021) <sup>36</sup>	Partnering with Indigenous organisations for a sustainable environment	Macro
	8	DCCEEW (2024)	National Water Initiative	Macro
	9	Moggridge and Mihiniui, (2018) <sup>46</sup>	Indigenous principles for water quality (Australian and New Zealand Guidelines for Fresh and Marine Water Quality)	Macro

(Continues)



TABLE 1 | (Continued)

Evidence type	#	Author, year	Title	System level
	10	Australian Government National Water Grid (2024) <sup>47</sup>	First Nations Water	Macro
	11	Watertrust Australia Ltd., (2023) <sup>48</sup>	First Nations engagement in water policy reform	Macro
	12	Watertrust Australia Ltd., (2024) <sup>49</sup>	The landscape of First Nations water rights and interests	Macro
	13	Watertrust Australia Ltd., (2023) <sup>50</sup>	Exploring a First Nations voice in water policy reform	Macro
	14	New South Wales Department of Climate Change, Energy, the Environment and Water, 2008-current <sup>51</sup>	Aboriginal Communities Water and Sewerage Program	Meso
	15	Victoria State Government Department of Environment, Energy and Climate Action (DEECA), 2024 <sup>52</sup>	Aboriginal Water Program	Meso
	16	DEECA, 2020 <sup>53</sup>	Water, Country and Community Program (2020–2024)	Meso
	17	Government of Western Australia Department of Water and Environmental Regulation, 2024 <sup>54</sup>	Aboriginal Water and Environment Advisory Group	Meso
	18	Government of Western Australia Department of Water and Environmental Regulation, 2023 <sup>55</sup>	Bring Together Walk Together Aboriginal Partnership Framework	Meso
	19	Northern Territory Government, 2023 <sup>56</sup>	Territory Water Plan	Meso
	20	Tasmania Government Department of Natural Resources and Environment, 2024 <sup>57</sup>	Aboriginal Freshwater Interests	Meso
	21	Government of South Australia Department for Environment and Water, 2024 <sup>58</sup>	Annual Water Security Update 2024	Meso
	22	Government of South Australia Department for Environment and Water, 2022 <sup>59</sup>	Water Security Statement 2022 Water for Sustainable Growth	Meso
	23	Queensland Government Department of Regional Development, Manufacturing and Water, 2023 <sup>60</sup>	First Nations Water Strategy	Meso
	24	ACT Government, 2014–2044 <sup>61</sup>	ACT Water Strategy 2014–44. Striking the Balance.	Meso

(Continues)

TABLE 1 | (Continued)

Evidence type	#	Author, year	Title	System level
Case studies ( <i>n</i> = 4)	1	Vanweydeveld & Water Services Association of Australia (2022) <sup>4</sup>	Northern Territory: A successful Aboriginal engagement through honest and genuine trusted relationships: the case of Borroloola	Micro
	2		South Australia: Building community resilience in partnership with remote communities. The Anangu Pitjantjatjara Yankunytjatjara lands	Micro
	3		Queensland: Safe and Healthy Drinking Water in Indigenous Local Government Areas Program	Micro
	4		Western Australia: Water Corporation 'Yesterday, Today, and Tomorrow'	Micro
Media ( <i>n</i> = 5)	1	Australian Government National Water Grid, 2023 <sup>62</sup>	Closing the Gap: \$150 million towards First Nations water security	Macro
	2	Australian Broadcasting Corporation Rural, Clint Jasper, 2024 <sup>63</sup>	Better climate science, greater First Nations participation flagged in national water policy overhaul	Macro
	3	Australian Government Department of the Prime Minister and Cabinet, 2023 <sup>64</sup>	Next step towards closing the gap	Macro
	4	Moggridge, Beal and Lansbury, The Conversation, 2022 <sup>34</sup>	Countless reports show water is undrinkable in many Indigenous communities. Why has nothing changed?	Macro
	5	Australian Broadcasting Corporation, Daniel Litiens, 2023 <sup>65</sup>	NT government's first water plan to focus on safe drinking water for remote communities	Meso

not Aboriginal and Torres Strait Islander-led research conducted by, with and/or for Aboriginal and Torres Strait Islander peoples and communities. Rather, the included studies offered insights into ways Aboriginal and Torres Strait Islander perspectives were integrated into drinking water policy. Therefore, we combined two tools to assess our included studies. First, we developed a set of culturally informed questions (informed by the CREATE tool) to evaluate the extent to which each study incorporated Indigenous knowledges and expertise and benefited Aboriginal and Torres Strait Islander peoples. Author 2 led the development of these questions with support from Authors 1 and 3. Second, we analysed each study's methodological quality using the Joanna Briggs Institute (JBI) Critical Appraisal tools for use in JBI Systematic Reviews Checklist for Qualitative Research (Institute 2017). Authors 1–3 discussed their cultural and methodological analysis of each included study. All authors independently assessed and rated each included paper before reaching consensus on the quality ratings of each study through yarning (Walker et al. 2014). Our assessment is outlined in Appendix A (Cultural and Quality assessment using cultural assessment tool and JBI Critical appraisal checklist for qualitative research).

## 2.11 | Synthesis and Reporting

Author 1 employed thematic analysis techniques to categorise and code the data. Authors 1–3 identified pertinent CMO themes and subthemes. All authors validated the resulting CMO configurations outlined in Figure 2. Key findings were presented to the CBT, and our yarning circles elucidated the broader implications

of drinking water policies for Aboriginal and Torres Strait Islander peoples within diverse Australian contexts (Appendix B).

## 3 | Results

### 3.1 | Paper Selection

As shown in Table 1, we included five (5) peer-reviewed academic studies and thirty-three (33) grey literature files (including twenty-four (24) government reports, four (4) case studies and five (5) media files) in our review.

### 3.2 | Local Drinking Water Policy

Analysing drinking water policies for over 500 hundred local councils in Australia was beyond the scope of our study. Therefore, we included four local examples that described efforts to engage local Aboriginal and Torres Strait Islander communities in drinking water policy and management. These examples are listed as 'case studies' in Table 1 and highlight best practices within a local setting. We drew insights from these case studies to inform our understanding of the micro-level context, mechanisms and outcomes.

### 3.3 | Context-Mechanism-Outcomes

Authors 1–3 analysed the included evidence to inform our CMO table, which was verified by our CBT and outlined in Figure 2.

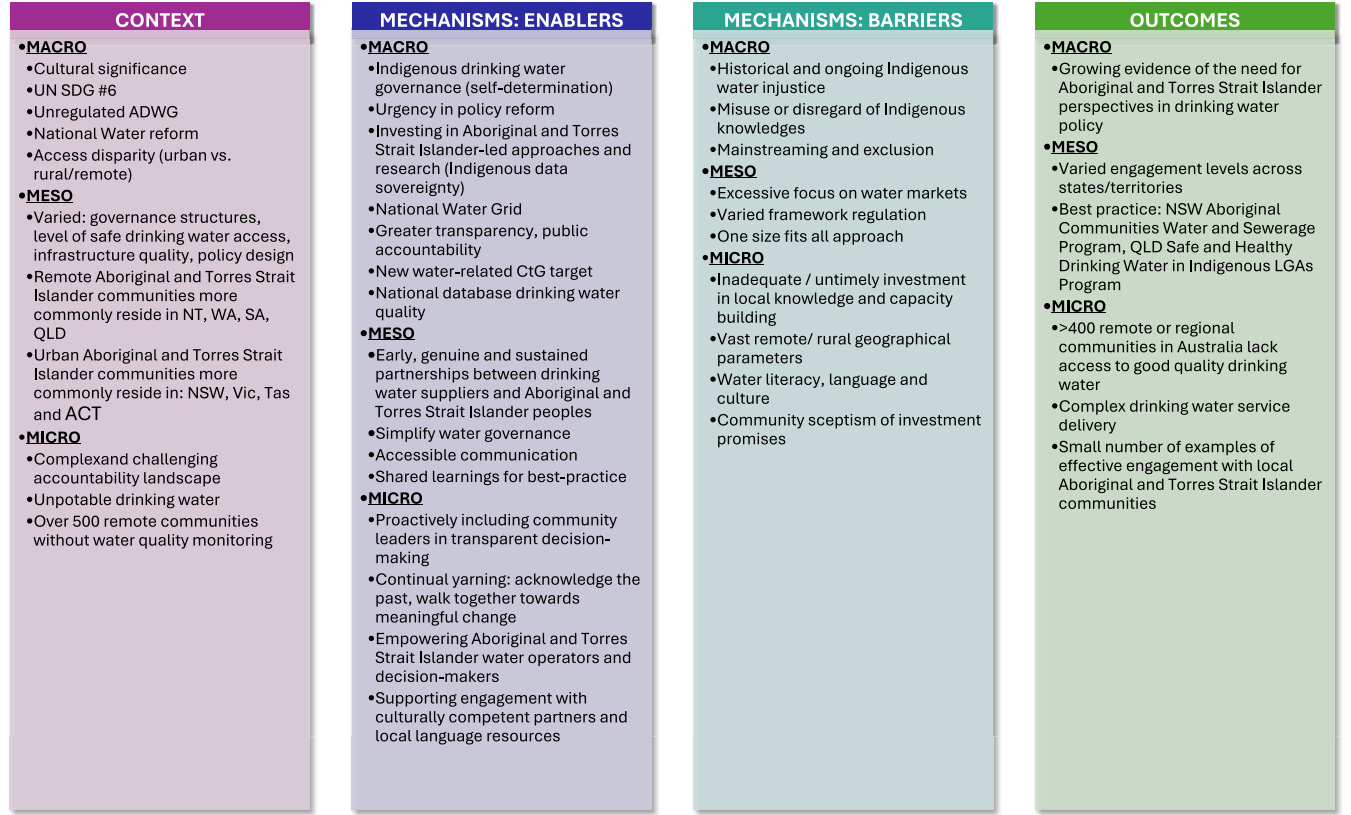


FIGURE 2 | Context-mechanism-outcome summary.



### 3.4 | Context

Essentially, drinking water injustices experienced by Aboriginal and Torres Strait Islander peoples are severe and widespread (Balasooriya et al. 2023; Howey and Grealy 2021; Water Services Association of Australia 2022; Wyrwoll et al. 2022). Among the 1100 remote communities where approximately 150,000 Aboriginal and Torres Strait Islander peoples reside, 45% are located in the Northern Territory (Water Services Association of Australia 2022). Wyrwoll found that 408 remote and regional communities lack access to safe drinking water, with 40% of these being Aboriginal and Torres Strait Islander communities. Despite this scenario, we are uncertain of the precise extent of the drinking water gap. The evidence indicates the urgency required for policymakers to include Aboriginal and Torres Strait Islander perspectives in drinking water policy design. The context of drinking water policy is multi-faceted. At a global level, safe drinking water access is highlighted as a human right in the United Nations Sustainable Development Goal 6. At the macro (national) level, the Australian Drinking Water Guidelines (ADWG) set the national quality standards. However, they lack regulatory enforcement, thereby delegating safe drinking water responsibility to state/territory and local governments. National water reform efforts, such as the National Water Reform 2024, recognise that water holds cultural significance for Aboriginal and Torres Strait Islander peoples (Commission 2024a). Despite this, significant drinking water disparities persist across Australia. Urban centres typically encounter minimal issues, whereas rural and remote areas face extensive drinking water challenges. At the meso (state/territory) level, drinking water policy, governance, access and infrastructure quality significantly vary. Rural and remote Aboriginal and Torres Strait Islander communities predominantly reside in the Northern Territory, Western Australia, South Australia and Queensland, whereas urban communities commonly reside in New South Wales, Victoria, Tasmania and the Australian Capital Territory (Wyrwoll et al. 2022). The micro-level (local) context is marked by a complex and challenging policy landscape with minimal drinking water quality monitoring in over 500 remote communities (Water Services Association of Australia 2022). Compared to other states, Tasmania's engagement with Aboriginal and Torres Strait Islander peoples on drinking water policy is notably deficient (Green 2021).

### 3.5 | Mechanisms—Enablers

At the macro level, the evidence points towards the need to embed Aboriginal and Torres Strait Islander drinking water governance, knowledges and self-determination in national drinking water policy. The systemic change required to enable this is contingent upon policy reform prioritising significant investment in Aboriginal and Torres Strait Islander-led approaches and research, inclusive and transparent decision-making and streamlined public accountability. Mechanisms to facilitate this include a national drinking water quality database. At the meso-level, genuine and sustained partnerships between drinking water suppliers and Aboriginal and Torres Strait Islander communities are vital. Simplifying drinking water governance and investing in culturally relevant resources to support engagement

can strengthen these partnerships. A shared understanding of best practice is contingent upon cross-jurisdictional knowledge exchange of lessons learned in engaging Aboriginal and Torres Strait Islander peoples in policy design. At the micro level, actively including Aboriginal and Torres Strait Islander community leaders in transparent decision-making processes, undertaking continuous local yarning that acknowledges the past and fosters shared decision-making pathways, is also essential. Moreover, providing resources for local Aboriginal and Torres Strait Islander water operators through training, reliable drinking water infrastructure and local language resources is needed.

### 3.6 | Mechanisms—Barriers

At the macro level, barriers to effectively engaging Aboriginal and Torres Strait Islander peoples in drinking water policy include historical and ongoing Aboriginal and Torres Strait Islander water injustices which is compounded by the misuse or disregard of Aboriginal and Torres Strait Islander knowledge systems. Mainstreaming (i.e., focusing on the majority) in national water policies excludes Aboriginal and Torres Strait Islander perspectives which further exacerbates these issues. At the meso-level, the differing degrees of Aboriginal and Torres Strait Islander involvement in regulatory frameworks highlight the variability in state and territorial openness to engaging with Aboriginal and Torres Strait Islander communities. While some state/territory drinking water policies have engaged Aboriginal and Torres Strait Islander peoples in their design (e.g., NSW), others are lagging. At the micro level, a 'one size fits all' engagement approach fails to consider and address the diverse needs of every Aboriginal and Torres Strait Islander community. Other issues hindering shared decision-making efforts include low water literacy, language barriers, vast geographical parameters of remote and rural areas and community scepticism towards investment promises.

### 3.7 | Outcomes

At the macro level, there is growing evidence supporting the inclusion of Aboriginal and Torres Strait Islander knowledges in drinking water policy design. At the meso-level, notable best practice examples of shared decision-making include the NSW Aboriginal Communities Water and Sewerage Program and the Queensland Safe and Healthy Drinking Water in Indigenous Local Government Areas Program. We determined the best practice hallmarks in these policies by their strong community engagement, cultural integration into policy content and sustainability measures. Such characteristics can foster inclusive, culturally respectful and sustainable policy design. The micro level situation remains dire, with over 400 remote or regional communities in Australia lacking access to good quality drinking water (CSIRO 2023). Complex drinking water infrastructure and service delivery in these areas exacerbate the problem. Despite this, notable examples of successful local engagement with Aboriginal and Torres Strait Islander communities in drinking water management (not policy) provide valuable insights for adaptation in other local settings.

3.8 | Programme Theory

Our programme theory is ‘*The complex and extensive drinking water issues impacting Aboriginal and Torres Strait Islander communities (context) necessitates the integration of Aboriginal and Torres Strait Islander governance and self-determination in policy design, implementation and evaluation (mechanisms). Long-term funding for transparent shared decision-making at all system levels (mechanisms) can empower Aboriginal and Torres Strait Islander peoples to co-design solutions with policymakers to overcome entrenched drinking water inequities (outcome).*

3.9 | Roadmap for Privileging Aboriginal and Torres Strait Islander Knowledges in Designing Drinking Water Policy

We consolidated our findings into a comprehensive roadmap (Figure 3). Our roadmap illustrates the essential enablers for advancing genuine involvement of Aboriginal and Torres Strait Islander peoples in drinking water policy and barriers impeding this objective.

4 | Discussion

We set out to understand if and how Aboriginal and Torres Strait Islander perspectives are integrated in drinking water policy in Australia. While a mounting body of evidence emphasises the fundamental requisite to engage Aboriginal and Torres Strait Islander peoples in designing drinking water policy, these efforts are only recently being recognised but not necessarily acted upon and remain fragmented across governments (Commission 2024a).

Although current collaborative efforts signify positive advancement, they do not yet encompass all system levels (national, state and local) necessary to effect enduring and system-wide transformation. Instead, engagements with Aboriginal and Torres Strait Islander peoples are varied, misaligned and inconsistent across state, territory and local settings (Water Services Association of Australia 2022). This corresponds with drinking water incongruencies between urban and rural/remote contexts. While policy instruments that support Aboriginal and Torres Strait Islander peoples to engage in water reform exist in some places (e.g., National Cultural Flows Research Program (Project 2018)), a systematic focus on knowledge and capacity-building efforts to bolster water management remains inadequate (Commission 2024a). Thus, the complex bureaucracy web that Aboriginal and Torres Strait Islander peoples are expected to navigate reinforces the status quo of inequitable access to safe drinking water across Australia (CSIRO 2023).

While the United Nations acknowledges that access to safe drinking water is a human right, this is not enshrined in Australia’s national, state and local legislation (Howey and Grealy 2021). Therefore, the government’s inability to provide all Australians with safe drinking water does not inherently constitute a breach of its legal obligations. Thus, all levels of government are not held to account to uphold this human right. This manifests in the distinct drinking water disparity between urban and rural/remote settings, including inconsistent and nontransparent publication of drinking water quality data (CSIRO 2023). Similarly, while policies acknowledge the cultural, spiritual and economic significance of water for Aboriginal and Torres Strait Islander peoples, including Aboriginal and Torres Strait Islander peoples in decision-making and policy design is not mandated across all system levels. Thus, drinking water policies

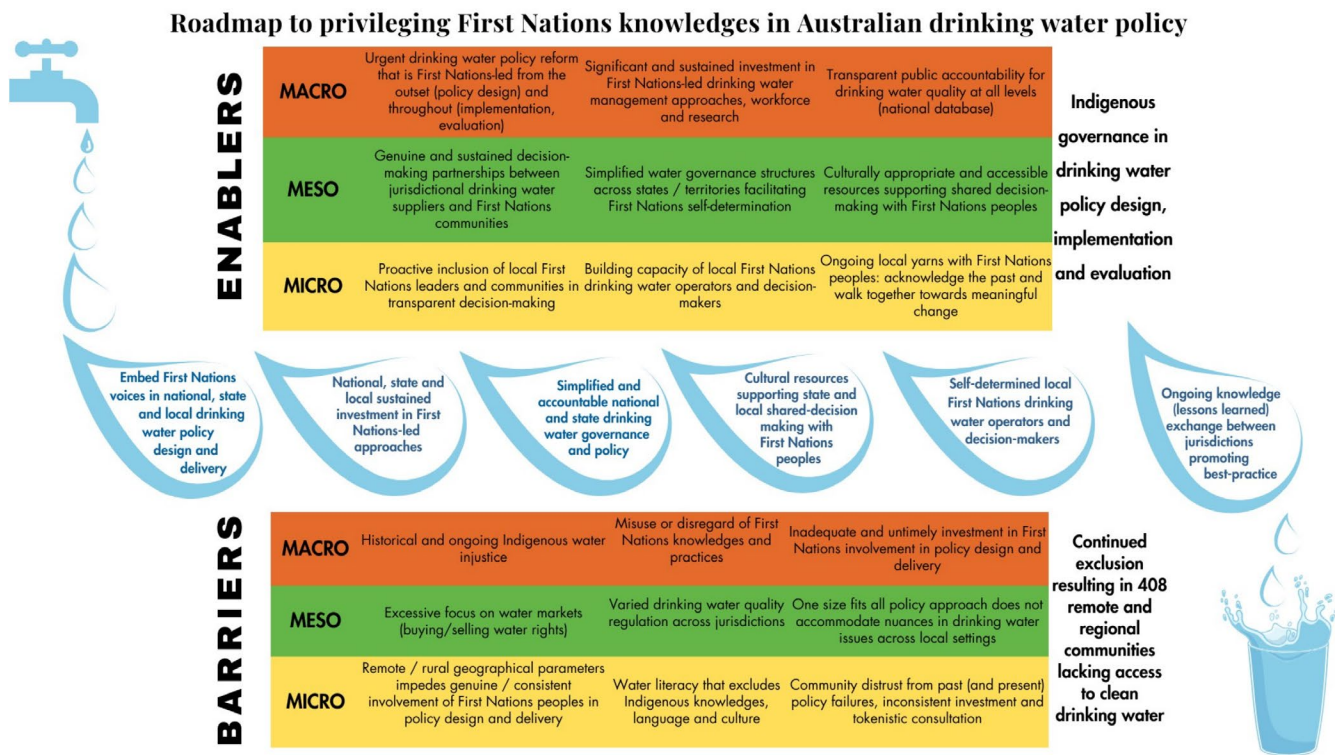


FIGURE 3 | Roadmap to privileging Aboriginal and Torres Strait Islander knowledges in Australian drinking water policy.

do not meaningfully reflect culturally relevant and place-based knowledges that may inform sustainable outcomes (Jackson and Moggridge 2019). Instead, policies are generally designed to accommodate mainstream society, neglecting the unique needs of Aboriginal and Torres Strait Islander peoples (Water Services Association of Australia 2022). Also, a mutual lack of understanding exists between Aboriginal and Torres Strait Islander communities and water policymakers and managers (Water Services Association of Australia 2022). This is largely due to the exclusion of Aboriginal and Torres Strait Islander knowledges from technical water literacy frameworks, which often fail to grasp water's cultural significance and the ancient knowledges that informed access, use, supply, quality and sustainability for millennia (Moggridge 2021).

We also set out to understand the contextual factors and mechanisms of engaging with Aboriginal and Torres Strait Islander peoples associated with drinking water policy. The context and mechanisms content in the Results section addresses this line of inquiry. While Water Services Association of Australia's report yielded noteworthy findings for our review (Water Services Association of Australia 2022), it remains overlooked that such knowledges have long been disseminated by Aboriginal and Torres Strait Islander authors (Hall et al. 2022; Hall et al. 2021; Moggridge, Beal, et al. 2022a). This signifies the imperative to acknowledge that Aboriginal and Torres Strait Islander peoples hold custodianship over these knowledges, despite the prevailing narrative dominated by non-Indigenous-led research. Notable culturally relevant resources that set the precedence for engaging Aboriginal and Torres Strait Islander peoples in drinking water policy include 'Our Knowledge Our Way' (Woodward et al. 2020), Partnering with Aboriginal and Torres Strait Islander organisations for a sustainable environment' (Energy 2019), and 'National Water Reform 2024 Inquiry report' (Commission 2024a).

## 5 | Limitations, Future Research

While our search strategy (including database selection and search terms) was extensive, it may not have captured all relevant studies, potentially omitting critical perspectives. However, our continuous yarns refined our findings to inform our programme theory. We were unable to locate local government reports and case studies that comprehensively outlined the contextual factors, mechanisms (enablers and barriers) and outcomes associated with integrating Indigenous knowledges into drinking water policy. While we found Indigenous-led sources that offered valuable insights regarding broader water policy, these did not extend to specific information on drinking water policy. While the rigour of our included case studies may be subject to scrutiny, we relied on their insights to form a basic understanding of how Indigenous knowledges at the local and community levels were integrated into drinking water policy. This highlights a gap in the availability of more robust and peer-reviewed sources on this specific topic. Given the cultural and geographically diverse contexts, our findings are not generalisable to all Aboriginal and Torres Strait Islander communities. The challenge in adequately capturing the full complexity of the system-wide context may have oversimplified nuanced drinking water problems facing Aboriginal and Torres Strait Islander

peoples. Also, ongoing policy changes may outdate some of our findings.

Future research could further explore the enablers for code-signing national, state/territory and local drinking water policy with Aboriginal and Torres Strait Islander peoples to inform a roadmap for drinking water for all Australians. This could also encompass an exploration of the barriers policymakers encounter in their pursuit of integrating Aboriginal and Torres Strait Islander knowledges in drinking water policy design. Future research could also look at the impact of system-wide capacity building for Aboriginal and Torres Strait Islander water operators, systems and decision-makers. Also, a longitudinal exploration of the progress and long-term impacts of drinking water policy on the health and well-being of Aboriginal and Torres Strait Islander communities. Assessing the effectiveness of existing policies, such as the NSW Aboriginal Communities Water and Sewerage Program and the QLD Safe and Healthy Drinking Water in Indigenous LGAs Program, could elucidate best practice standards.

## 6 | Conclusion

Our realist review examined the contextual factors and mechanisms influencing Aboriginal and Torres Strait Islander involvement in drinking water policy. We found that while there is increasing recognition of the importance of engaging Aboriginal and Torres Strait Islander peoples in drinking water policy, current efforts are fragmented and inconsistent across all government levels. Our findings informed our programme theory underpinning the dire situation pertaining to Aboriginal and Torres Strait Islander communities' access to safe drinking water. We presented key enablers to including Aboriginal and Torres Strait Islander peoples in drinking water policy design, implementation and evaluation (e.g., transparent, timely and continuous shared decision-making). We highlighted that generic and tokenistic solutions often fall short, and instead, drinking water policy and implementation should be tailored to local contexts to incorporate the unique cultural nuances. We recommend that future research build on these insights and evaluate current engagement efforts in policy design to advance our understanding and enhance the design and implementation of national, state/territory and local drinking water policy.

### Author Contributions

**Margaret Apolima Fono:** conceptualization, investigation, writing – original draft, methodology, project administration, validation, data curation. **Felicity Chapman:** conceptualization, methodology, data curation, supervision, formal analysis, writing – review and editing, project administration, visualization. **Vita Christie:** conceptualization, methodology, writing – review and editing, formal analysis, project administration, data curation, supervision. **Carmen Parter:** conceptualization, methodology, writing – review and editing, visualization, supervision. **Jodi Knight:** supervision, methodology, conceptualization, visualization, writing – review and editing. **Simone Sherri:** writing – review and editing, supervision. **Uncle Boe Rambaldini:** supervision, resources. **Bradley Moggridge:** conceptualization, methodology, supervision, writing – review and editing. **Kylie Gwynne:** conceptualization, methodology, supervision, resources, visualization, writing – review and editing.



## Acknowledgements

The authors acknowledge that the lands on which we live, work and play were never ceded and, therefore, always were and always will be Aboriginal and Torres Strait Islander people's lands. We pay our respects to all Aboriginal and Torres Strait Islander peoples, the traditional custodians of these lands. We honour their profound cultural connection to land, sea, sky and community and commit to reconciliation for all Aboriginal and Torres Strait Islander peoples in their homes, workplaces and social environments. The authors acknowledge the Australian Government Research Training Program Scholarship, Macquarie University, University of New South Wales and Onehealth Organisation (Stephanie Clerc, Benjamin Haynes and Louise Barrett) for their financial support for the corresponding author's PhD studies. Open access publishing facilitated by University of New South Wales, as part of the Wiley - University of New South Wales agreement via the Council of Australian University Librarians.

## Ethics Statement

The Australian Institute of Aboriginal and Torres Strait Islander Studies granted ethical approval for this research (#REC-0161).

## Conflicts of Interest

The authors declare no conflicts of interest.

## Data Availability Statement

The authors have nothing to report.

## Prior Presentations

No prior presentations.

## Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the manuscript preparation, Author 1 used Grammarly and Copilot to edit and refine early manuscript drafts to enhance readability. After using Grammarly and Copilot, Author 1 reviewed and edited the content as needed and (along with all co-authors) takes full responsibility for the publication's content.

## Positionality Statement of the Author Team

Authors 2, 4, 5 and 6 are Co-design Brains Trust (CBT) members. Author 2 is a proud Aboriginal woman (Stolen Generation descendant) living on Ngaro country. Author 2 is dedicated to honouring and preserving the ancient Aboriginal culture and supporting Aboriginal and Torres Strait Islander peoples and communities in sharing their culture (Weavers 2024). Author 2 played a lead role in our study's design, problem posing and data collection, analysis and interpretation stages. Author 4 is a proud Murri woman from Darumbai and Jura clans of the Birra Gubba Nation, born in Bowen, QLD. Author 4 has South Sea Island heritage from Tanna Island in Vanuatu. Author 4 has worked across local communities as a registered nurse, midwife and Aboriginal Women's Health Nurse Practitioner. Author 4 has also worked in national and state government, in child protection, law, justice and health policy and is also affiliated with Djurali (Education 2024). Author 4 played a key role in our study's problem-posing, data synthesis and manuscript drafting. Author 5 is a proud Barkindji woman, raised on Wiradjuri country and living on Dharawal lands, NSW. Author 5 has worked in Government and community-controlled sectors across social and emotional well-being and suicide prevention policy and programme development. Author 5 is dedicated to uplifting Community voices and ensuring self-determination and cultural ways of doing, knowing, being and healing are embedded in policy and programme design, delivery and implementation. Author 5 played a key role in our study's problem posing, design and data synthesis. Author 6 is a

Wotjobaluk woman who lives and works on Wiradjuri Country where she is raising her family. Author 6 has worked extensively with the Aboriginal Community Controlled sector in NSW around research and programme design and implementation in the areas of food security, ear health, breastfeeding and child health. SS is passionate about Indigenous data sovereignty and supporting communities to lead research our way. SS provided feedback on the research and manuscript. Author 8 is a Kamilaroi water scientist currently in Academia but has spent many years in Aboriginal water and environmental knowledge/science, research, regulation, policy, across government, academia and private industry. Author 8's research aims to bridge the gap between Aboriginal Traditional Knowledges and Western Science by advocating for culturally relevant and sustainable policies. Author 8 provided feedback on the study approach and manuscript development. Authors 1, 3, 7 and 9 are affiliated with Djurali. Author 1 led this research and identifies as a non-Aboriginal and Torres Strait Islander Australian. Author 1 works in Aboriginal and Torres Strait Islander policy and is deeply committed to equitable policy promoting social justice and meaningful change for Aboriginal and Torres Strait Islander peoples. Author 3 is a non-Aboriginal and Torres Strait Islander Australian. Author 3 has built enduring connections with NSW Aboriginal communities and specialises in translational research in Aboriginal health (Institute 2024c). Author 3 played a key role in our study's design, problem posing and data collection, analysis and interpretation stages and manuscript drafting. Author 7 is a proud Bundjalung Elder from north coast New South Wales. Author 7 has worked across local, state and federal governments, and in the private and nongovernment organisation sector for over 35 years, with the majority of these positions in Aboriginal affairs (Institute 2024). Author 7 supported the research and manuscript development. Author 9 is neither Aboriginal nor Torres Strait Islander and has worked in health and human services for 30 years, building expertise in operational, governance and strategic leadership to tackle complex challenges with priority populations (Institute 2024a). Author 9 played a lead role in the study's conceptualisation and design, and manuscript drafting.

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## Appendix A: Quality Assessment results for included studies A

Quality assessment using cultural relevance assessment and JBI Critical appraisal checklist for systematic review

Study 1: A review of drinking water quality issues in remote and Indigenous communities in rich nations with special emphasis on Australia (2023)	Assessor		
	Author 2	Author 3	Author 1
1. Does the research acknowledge and integrate Aboriginal and Torres Strait Islander peoples' knowledges into the research design and findings?	No	No	No
2. Does the research cite Aboriginal and Torres Strait Islander scholars and sources?	Yes* (%?)	Yes	Yes
3. Does the research describe Aboriginal and Torres Strait Islander peoples' specific needs and perspectives?	Partially	Yes	Partially
4. Are there reported outcomes for the Aboriginal and Torres Strait Islander communities involved in the research (including potential or actual benefits)?	No	No	No
5. Does the research build capacity in Aboriginal and Torres Strait Islander communities?	No	No	No
6. Does the research suggest the findings can be applied to improve policies, practices or future research affecting Aboriginal and Torres Strait Islander communities?	Partially	Yes	Yes
7. Are there any commitments to follow-up with the relevant communities post-research?	No	No	No
8. Is the review question clearly and explicitly stated?	Unclear	Yes	No
9. Were the inclusion criteria appropriate for the review question?	Unclear	Yes	Unclear
10. Was the search strategy appropriate?	Unclear	Yes	Unclear
11. Were the sources and resources used to search for studies adequate?	Yes	Yes	Yes
12. Were the criteria for appraising studies appropriate?	Unclear	Unclear	Unclear
13. Was critical appraisal conducted by two or more reviewers independently?	Unclear	Unclear	Unclear
14. Were there methods to minimize errors in data extraction?	Unclear	Unclear	Unclear
15. Were the methods used to combine studies appropriate?	Unclear	Yes	Unclear
16. Was the likelihood of publication bias assessed?	*Unclear	Unclear	Unclear
17. Were recommendations for policy and/or practice supported by the reported data?	Yes	Yes	Yes
18. Were the specific directives for new research appropriate?	Yes	Yes	Yes
Sub-total	4	10	5
<b>Grand-total</b>		<b>~35%</b>	

\* questionable sources, political bias concern.

## Quality assessment using cultural relevance assessment and JBI Critical appraisal checklist for Textual evidence: expert opinion

<b>Study 2: Drinking water security: the neglected dimension of Australian water reform (2021)</b>	<b>Assessor</b>		
	<b>Author 2</b>	<b>Author 3</b>	<b>Author 1</b>
1. Does the research acknowledge and integrate Aboriginal and Torres Strait Islander peoples' knowledges into the research design and findings?	No	No	No
2. Does the research cite Aboriginal and Torres Strait Islander scholars and sources?	Yes (small %)	Yes	Yes
3. Does the research describe Aboriginal and Torres Strait Islander peoples' specific needs and perspectives?	Partially	Yes	Partially
4. Are there reported outcomes for the Aboriginal and Torres Strait Islander communities involved in the research (including potential or actual benefits)?	No	No	No
5. Does the research build capacity in Aboriginal and Torres Strait Islander communities?	No	No	No
6. Does the research suggest the findings can be applied to improve policies, practices or future research affecting Aboriginal and Torres Strait Islander communities?	Yes	Yes	Yes
7. Are there any commitments to follow-up with the relevant communities post-research?	Unclear	Unclear	No
8. Is the source of the opinion clearly identified?	Yes	Yes	Yes
9. Does the source of opinion have standing in the field of expertise?	Yes	Yes	Yes
10. Are the interests of the relevant population the central focus of the opinion?	Yes	Yes	Yes
11. Does the opinion demonstrate a logically defended argument to support the conclusions drawn?	*Unclear	Yes	Yes
12. Is there reference to the extant literature?	Yes	Yes	Yes
13. Is any incongruence with the literature/sources logically defended?	Unclear	No	Unclear
Sub-total	<b>6</b>	<b>8</b>	<b>7</b>
<b>Grand-total</b>	<b>~54%</b>		

\* questionable sources, political bias concern.

## Quality assessment using cultural relevance assessment and JBI Critical appraisal checklist for systematic review

<b>Study 3: Measuring the gaps in drinking water quality and policy across regional and remote Australia (2022)</b>	<b>Assessor</b>		
	<b>Author 2</b>	<b>Author 3</b>	<b>Author 1</b>
1. Does the research acknowledge and integrate Aboriginal and Torres Strait Islander peoples' knowledges into the research design and findings?	No	No	No
2. Does the research cite Aboriginal and Torres Strait Islander scholars and sources?	Yes (small %)	Yes	Yes
3. Does the research describe Aboriginal and Torres Strait Islander peoples' specific needs and perspectives?	Partially	Partially	Yes
4. Are there reported outcomes for the Aboriginal and Torres Strait Islander communities involved in the research (including potential or actual benefits)?	No	No	No
5. Does the research build capacity in Aboriginal and Torres Strait Islander communities?	No	No	No
6. Does the research suggest the findings can be applied to improve policies, practices or future research affecting Aboriginal and Torres Strait Islander communities?	No	Yes	Yes

(Continues)

7. Are there any commitments to follow-up with the relevant communities post-research?	No	N/A	No
8. Is the review question clearly and explicitly stated?	Yes	Yes	Yes
9. Were the inclusion criteria appropriate for the review question?	Unclear	Yes	Unclear
10. Was the search strategy appropriate?	Yes	Yes	Yes
11. Were the sources and resources used to search for studies adequate?	Yes	Yes	Yes
12. Were the criteria for appraising studies appropriate?	Unclear	Yes	Unclear
13. Was critical appraisal conducted by two or more reviewers independently?	Unclear	Unclear	Unclear
14. Were there methods to minimize errors in data extraction?	Unclear	Unclear	Unclear
15. Were the methods used to combine studies appropriate?	Unclear	Yes	Unclear
16. Was the likelihood of publication bias assessed?	Unclear	No	Unclear
17. Were recommendations for policy and/or practice supported by the reported data?	Yes	Yes	Yes
18. Were the specific directives for new research appropriate?	Unclear	N/A	Yes
Sub-total	5	9	8
<b>Grand-total</b>	<b>~41%</b>		

Quality assessment using cultural relevance assessment and JBI Critical appraisal checklist for Textual evidence: expert opinion

<b>Study 4: Closing the water for people and communities gap improving water services to Aboriginal and Torres Strait Islander remote communities – Full report (2022)</b>	<b>Assessor</b>		
	<b>Author 2</b>	<b>Author 3</b>	<b>Author 1</b>
1. Does the research acknowledge and integrate Aboriginal and Torres Strait Islander peoples' knowledges into the research design and findings?	Yes	Yes	Yes
2. Does the research cite Aboriginal and Torres Strait Islander scholars and sources?	Yes	Yes	Yes
3. Does the research describe Aboriginal and Torres Strait Islander peoples' specific needs and perspectives?	Yes	Yes	Yes
4. Are there reported outcomes for the Aboriginal and Torres Strait Islander communities involved in the research (including potential or actual benefits)?	Yes	Yes	Yes
5. Does the research build capacity in Aboriginal and Torres Strait Islander communities?	Yes	Yes	Yes
6. Does the research suggest the findings can be applied to improve policies, practices or future research affecting Aboriginal and Torres Strait Islander communities?	Yes	Yes	Yes
7. Are there any commitments to follow-up with the relevant communities post-research?	Yes	Yes	Yes
8. Is the source of the opinion clearly identified?	Yes	Yes	Yes
9. Does the source of opinion have standing in the field of expertise?	Yes	Yes	Yes
10. Are the interests of the relevant population the central focus of the opinion?	Yes	Yes	Yes
11. Does the opinion demonstrate a logically defended argument to support the conclusions drawn?	Yes	Yes	Yes
12. Is there reference to the extant literature?	Yes	Yes	Yes
13. Is any incongruence with the literature/sources logically defended?	Unclear	N/A	Unclear
Sub-total	12	12	12
<b>Grand-total</b>	<b>~92%</b>		

Study 5: Cultural value of water and western water management: an Australian Indigenous Perspective (2021)	Assessor		
	Author 2	Author 3	Author 1
1. Does the research acknowledge and integrate Aboriginal and Torres Strait Islander peoples' knowledges into the research design and findings?	Yes	Yes	Yes
2. Does the research cite Aboriginal and Torres Strait Islander scholars and sources?	Yes	Yes	Yes
3. Does the research describe Aboriginal and Torres Strait Islander peoples' specific needs and perspectives?	Yes	Yes	Yes
4. Are there reported outcomes for the Aboriginal and Torres Strait Islander communities involved in the research (including potential or actual benefits)?	Yes	No/NA?	Yes
5. Does the research build capacity in Aboriginal and Torres Strait Islander communities?	Yes	No/NA?	Yes
6. Does the research suggest the findings can be applied to improve policies, practices or future research affecting Aboriginal and Torres Strait Islander communities?	Yes	Yes	Yes
7. Are there any commitments to follow-up with the relevant communities post-research?	Yes	Yes	Yes
8. Is the source of the opinion clearly identified?	Yes	Yes	Yes
9. Does the source of opinion have standing in the field of expertise?	Yes	Yes	Yes
10. Are the interests of the relevant population the central focus of the opinion?	Yes	Yes	Yes
11. Does the opinion demonstrate a logically defended argument to support the conclusions drawn?	Yes	Yes	Yes
12. Is there reference to the extant literature?	Yes	Yes	Yes
13. Is any incongruence with the literature/sources logically defended?	N/A	N/A	N/A
Sub-total	12	10	12
Grand-total	~87%		



## Appendix B: Acronyms table

Acronym	Definition
ADWG	National Health and Medical Research Council's Australian Drinking Water Guidelines
AIATSIS	Australian Institute of Aboriginal and Torres Strait Islander Studies
CAWI	Committee on Aboriginal and Torres Strait Islander Water Interests
CBT	Co-design Brains Trust
CMO	Context-Mechanism-Outcome
CREATE	Centre of Research Excellence in Aboriginal Chronic Disease Knowledge Translation and Exchange's
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEECA	Victoria State Government Department of Environment, Energy and Climate Action
DCCEEW	Australian Government Department of Climate Change, Energy, the Environment and Water
Djurali	Djurali Centre for Aboriginal and Torres Strait Islander Health Research and Education
JBII	Joanna Briggs Institute
LGA	Local Government Area
WSAA	Water Services Association of Australia
TAS	Tasmania, Australia
NT	Northern Territory, Australia
WA	Western Australia, Australia
SA	South Australia, Australia
NSW	New South Wales, Australia
VIC	Victoria, Australia
QLD	Queensland, Australia