



Submission to the draft Fitzroy-Derby Water Resources Management Plan

June 2026

Environs Kimberley recognises that Aboriginal sovereignty has never been ceded and pays respect to all Traditional Owners as the custodians of Country.

We welcome the opportunity to comment on the Consultation Draft Fitzroy–Derby Water Resources Management Plan.

The Martuwarra Fitzroy River is one of the largest principally unregulated rivers remaining in Australia and is recognised globally for its high biodiversity and cultural values. For Kimberley Traditional Owners, the Martuwarra Fitzroy River is a living ancestral being with a right to life, essential to spiritual wellbeing, identity, community connection, and cultural knowledge. Across the Kimberley, Traditional Owners are leading work in self-determination, cultural conservation, and environmental stewardship, contributing to global recognition of Indigenous-led approaches to caring for Country.

The Kimberley is under increasing pressure from fossil fuel companies and large-scale irrigated agriculture interests seeking to extract its water and mineral resources for private benefit. For decades, governments, mining corporations, and irrigation interests have sought to use the waters of the Martuwarra Fitzroy, promising

economic development through resource extraction while failing to deliver lasting benefits for Kimberley communities or Country.

As a national heritage listed place and one of Australia's last large, free-flowing rivers, the Martuwarra Fitzroy River deserves a world-class, integrated land and water management system that establishes best practice in environmental protection and supports Traditional Owners' ongoing custodianship, care and governance of Kimberley Country.

Widely recognised as an ecosystem of outstanding environmental and cultural significance, the Martuwarra Fitzroy is the lifeblood of a 438.7-million-dollar tourism industry¹. These values were reflected in the public response to the *2020 Managing water in the Fitzroy River Catchment: Discussion paper for stakeholder consultation*, which drew more than 43,000 submissions across Australia calling for the river's environmental and Aboriginal cultural values to remain central in water planning. As a Living River and place of deep environmental and cultural significance, communities expect the Martuwarra Fitzroy to be managed and protected according to world-best standards.

A robust plan for the Martuwarra Fitzroy River must protect it from environmentally harmful development and respond to the impacts of climate change on Kimberley freshwater ecosystems, which threaten higher average temperatures, more frequent and prolonged heatwaves, increased evaporation from rivers, wetlands and floodplain waterholes, and greater evapotranspiration from riparian vegetation. For the Martuwarra, these changes are expected to reduce the resilience of dry-season refuges that support fish, turtles, crocodiles, waterbirds, and aquatic invertebrates, essential to the ecosystem of the Kimberley. We must act now to strengthen environmental protection and invest in culturally-informed stewardship of freshwater, so that the Martuwarra Fitzroy River may survive and thrive for generations to come.

Drawing on evidence of systemic failures in water planning, compliance, and monitoring across Western Australia, and analysis of current ecological threats and development pressures in the Kimberley, we provide recommendations that reflect contemporary water management best practice and upholds our vision and purpose to safeguard the Kimberley's rivers, aquifers, freshwater ecosystems, and biodiversity for future generations. For 30 years we have worked with communities, landholders and land managers, especially Aboriginal Traditional Owners and ranger groups for strong protection and sustainable management of

¹ [Tourism | RDA Kimberley | economy.id](https://tourism.rda.kimberley.id)

Kimberley lands and waters. Our work supports communities to undertake accessible and effective ecosystem monitoring across the Kimberley, building new capacities alongside Traditional knowledge. Protecting the Kimberley's freshwater future depends on empowering Kimberley people to better understand environmental water requirements, identify emerging threats, and manage water.

The effectiveness of the draft Fitzroy–Derby Water Resources Management Plan (draft Plan) is constrained by outdated and inadequate water legislation that does not reflect contemporary best practice in water planning, environmental protection, or shared governance. WA's principal legal instrument for water licensing and management is the *Rights in Water and Irrigation Act 1914* which does not enable adequate environmental protection or Traditional Owner authority over water planning, and disproportionately empowers licence holders. Without adequate legislative protections, many of the aspirations and expectations of the Kimberley community cannot be met.

Instead of providing the Kimberley community with confidence in the environmental future of the Martuwarra Fitzroy River, the draft Plan provides a pathway for large-scale allocations of groundwater in a poorly regulated water sector, where antiquated water laws have created systemic non-compliance and monitoring failures widespread across Western Australia, and have so far failed to protect our environment.

During the development of the draft Plan, no ecological or cultural baseline data was collected for groundwater-dependent ecosystems, and the draft Plan presents significant risks to Derby's town water supply. Derby's aquifers are already under stress from decades of mismanagement and overextraction and allocating additional groundwater in the Greater Derby region deepens the structural unsustainability of Derby's water system.

Furthermore, the draft Plan incorporates very few of the Traditional Owner Water Working Group's 2025 recommendations, a key Aboriginal stakeholder to the Plan, and instead proposes weakened measures, inadequate protections, and no meaningful authority. In response to the release of the draft Plan, the Kimberley Land Council, on behalf of the Traditional Owners Water Working Group, has stated that the group is "underwhelmed by an outcome that undervalues the role of Traditional Owners and remains constrained by outdated legislation in urgent need of reform²."

² Torre, G. (2026, April 1). Traditional Owners "underwhelmed" by WA government's plan for managing Fitzroy River catchment and Derby Peninsula. National Indigenous Times. <https://nit.com.au/01-04-2026/23529/traditional-owners-underwhelmed-by-wa-governments-plan-for-managing-fitzroy-river-catchment-and-derby-peninsula>

The decisions made through this water management plan will shape the future of the Kimberley's freshwater systems for generations. Our submission identifies where the draft Plan fails to meet our expectations for the Kimberley and offers positive steps toward its future.

The Kimberley has one of the world's last free rivers. It deserves the highest standard of care, so future generations can inherit a landscape as rich and alive as the Kimberley is today.

In writing this submission to the government, Environs Kimberley acknowledges our partners Kimberley Like No Where Else, funded by the charitable Pew Foundation, and we also acknowledge the immense effort of department staff and community groups in drafting this plan, especially the Traditional Owner Water Working Group, and the Kimberley Land Council, whose countless hours of dedication have made strong recommendations to the draft Plan.

Recommendation 1: That the following is legislated:

- A. No new dams on Martuwarra Fitzroy River or its tributaries
- B. Prohibit all forms of floodwater harvesting for irrigation in the Kimberley, including direct extraction and any indirect use through infrastructure that diverts, captures, or manipulates overland flows for storage, soil moisture enhancement, or managed aquifer recharge to support cropping activities.
- C. No surface water take from any waterway in the Plan area, unless for essential services or clearly defined and limited public interest purposes. Existing surface water licences for irrigated agriculture are to be progressively phased out through non-renewal at expiry.

Recommendation 2: Establish a statutory Kimberley water governance committee with majority Traditional Owner representation, which includes a freshwater ecosystem expert, and a representative from a local environment group, and which provides:

- A. legislated shared decision-making authority over water allocations and approvals
- B. mandatory consent powers (including veto rights) for all water licences and hydraulic fracturing proposals
- C. approval powers for waterway infrastructure permits
- D. to enshrine the Committee's role and powers in legislation, including review rights through the State Administrative Tribunal
- E. to empower the Committee to manage Aboriginal water holdings, including the option to retain water for cultural and environmental protection without penalty.

Recommendation 3: Implement standardised licence conditions that:

- A. prohibit the approval of any water allocations that exceed the sustainable extraction limits set out in the Water Management Plan.
- B. refuse new water licences to applicants with proven water-related criminal convictions or a documented history of serious non-compliance with water licensing conditions across any jurisdiction in Australia.
- C. require that all extraction licences to include strict compliance thresholds, with automatic, immediate suspension (without compensation) for any exceedance of permitted take.
- D. mandate the use of tamper-proof, real-time telemetry meters on all licenced extraction points, with data transmitted continuously to regulators and relevant oversight bodies.
- E. establish a fully public water accounting register that reports both permitted allocations and actual water take at property and catchment scale, updated in near real time.
- F. require mandatory on-farm water balance reporting, including reconciliation of allocations, usage, and losses, subject to independent audit.
- G. ensure monitoring, compliance oversight, and data verification functions are adequately resourced and embed co-regulatory arrangements that enable Traditional Owners to participate in monitoring compliance, reviewing water accounts, and identifying breaches.
- H. require transparent enforcement reporting, including publication of all compliance actions, suspensions, and licence revocations.
- I. an appropriate Traditional Owner entity must agree to all water licences.

Recommendation 4: Any structure that changes the flow of water in the plan area—including on-farm storages, roads, air-strips, and flood works—must require a water licence and a works approval, with a period of public comment included in the works approval process.

Recommendation 5: Adopt a precautionary approach by limiting groundwater allocations to no more than 5% of estimated recharge across the Plan area until more robust scientific data becomes available. Establish in the Plan an individual licence cap of 1 GL/year for irrigated agricultural licences.

Recommendation 6: Due to its inherently harmful impacts on groundwater resources, including water extraction demands and risks to water quality, aquifer integrity, and Living Waters, hydraulic fracturing (fracking) is banned from obtaining a water licence in the Plan area.

Recommendation 7: Establish a comprehensive, co-designed database of groundwater-dependent ecosystems across the Fitzroy Catchment and their environmental water requirements. This work must be led by Traditional Owner groups (Prescribed Bodies Corporate), with adequate resourcing to monitor and document groundwater-dependent ecosystems of cultural and ecological importance. Data governance must adhere to Indigenous Data Sovereignty principles and contemporary best practice, ensuring Traditional Owners retain authority over how data relating to Country is collected, accessed, and used.

Recommendation 8: Develop a robust numerical groundwater model for the Wallal and Erskine aquifers across the Derby Peninsula and Greater Derby subareas to assess inflow, recharge and throughflow responses under current and future water use, climate, and land-use scenarios. Groundwater allocation decisions for the Derby region should be guided by this transparent, independently reviewable modelling. The model should be developed:

- A.** as a matter of priority
- B.** with model assumptions, input datasets, methodologies and model outputs made publicly accessible
- C.** independently assessed

No new licences for irrigated agriculture in the Derby Peninsula and Greater Derby subareas should be approved until the model demonstrates, based on the best available scientific evidence, that extractions will be sustainable.

Recommendation 9: Develop a comprehensive plan for Derby's town water supply with a timeline for action, and costed options for alternative and sustainable water sources, using best practice standards for community consultation and project development.

Recommendation 10: Remove the Fitzroy River Barrage and barriers on the Camballin floodplain at Liveringa station to restore fish passage, improve floodplain health and increase population resilience of the critically endangered Freshwater Sawfish.

Recommendation 11: Develop and implement a works plan to assess, prepare, and progress nomination of the Camballin Floodplain ecosystem for Ramsar listing in accordance with Ramsar Convention requirements.

Recommendation 12: Fulfil the government's previous commitment to establish national parks along the Martuwarra Fitzroy River and extend this commitment so that national park protection applies along the river's full length, subject to agreement with Traditional Owners.

Recommendation 13: Establish a statutory protection zone along the Martuwarra Fitzroy River and its floodplains to prohibit dam construction, floodwater harvesting, mining activities, and irrigated agriculture. The protection zone should safeguard the ecological, hydrological, and cultural integrity of the river while supporting compatible land uses, including tourism, conservation, and carbon farming. Restore water-dependent ecosystems within the protection zone that have been degraded by current and historical irrigation and mining activities.

Recommendation 14: Undertake an independent, transparent investigation of legacy mine sites connected to rivers and groundwater systems in the Plan area, consistent with best practice science, and where water quality is found to be contaminated. Conduct remediation and restoration measures.

Recommendation 15: Establish a comprehensive regional groundwater and surface water monitoring network across the Fitzroy Catchment to monitor changes in freshwater flows and water quality, detect the impacts of climate change and water extraction, and support adaptive water management at the catchment scale. All data should be published in real time where possible through a fully open-access, easy-to-use public platform to ensure transparent and timely community access.

Recommendation 16: Establish and resource a region-wide water monitoring training program for Prescribed Bodies Corporate (PBCs) to build enduring capability in water data collection and analysis, satellite imagery, water quality monitoring, and ecosystem surveys to support the health of the region's rivers and groundwater systems, and support community capacity to respond to change.

Recommendation 17: Replace the *Rights in Water and Irrigation Act 1914* with modern water legislation that reflects contemporary best practice in water planning and protection, recognises First Law, prioritises environmental water requirements, and embeds transparent, participatory governance with shared decision-making by Traditional Owners.

Background

Environs Kimberley (EK) is the leading environmental organisation in the Kimberley, formed in 1996 to protect the Martuwarra Fitzroy River from being dammed for industrial-scale land clearing and water-intensive cotton farming. Historically, irrigated agricultural projects in the Fitzroy catchment have yielded broken promises and environmental ruin. For example, remnants of the failed rice growing experiment at Liveringa station continue to impact the ecologically significant Camballin floodplain³, where critically endangered sawfish, trapped by levee banks constructed for irrigation, have died en masse⁴. The more recent *Water for Food* programme⁵ has seen failed promises for irrigated agriculture in the Derby region, with the government speculating as much as 15,000 hectares could be available for irrigation⁶. Later studies showed this to be economically unfeasible with more like 800 hectares developable⁷.

³ DEC. (2009). Resource Condition Report for a Significant Western Australian Wetland, Le Lievre Swamp (Iljamalkarda) [Prepared for the Inland Aquatic Integrity Resource Condition Monitoring (IAI RCM) Project]. Department of Environment and Conservation. <https://library.dbca.wa.gov.au/static/FullTextFiles/024965.pdf>

⁴ Maloney, R. (2024, May 18). Deaths of 17 freshwater sawfish revealed in WA parliament this week prompt concerns over transparency. ABC News. <https://www.abc.net.au/news/2024-05-18/questions-in-wa-parliament-over-kimberley-sawfish-kill/103860722>

⁵ DWER. (2020b). Derby groundwater allocation plan For public comment (No. 69; Water Resource Allocation and Planning Report Series). Western Australian Government.

⁶ Pers. Comm.

⁷ DWER. (2018). Groundwater exploration for irrigation supply to the Knowsley area, West Kimberley.

Benefit-cost analysis, undertaken by UniSA (2019) has found that irrigation enterprises in the Kimberley are likely to be mostly unprofitable, create a poor return on public investment and create few jobs⁸. According to the study, public investment in research and development (R&D) for Aboriginal enterprises lags significantly behind the funding provided for irrigation and pastoralism. The study identified over \$35 million in government funding directed toward supporting growth in the irrigation and beef industries, compared to less than \$1 million for Aboriginal-led market sectors.

The investment in irrigation and beef industry R&D included several high-profile programs:

- \$15.5 million from the Western Australian Government's Water for Food program.
- \$15 million from the WA Government's Northern Beef Futures program.
- \$5 million in Commonwealth investment via the Northern Australia Water Resources Assessment (specifically the Fitzroy catchment portion).
- \$1.88 million from the Commonwealth CRC for the Developing Sustainable Cropping Systems for Cotton Grains and Fodder Project.

Decades of investment in irrigation have delivered few lasting economic benefits for the Kimberley, while overlooking industries that align with the region's environmental and cultural strengths. In contrast, the UniSA study found no evidence of substantial State Government investment in similar R&D initiatives for Indigenous-led industry in the Martuwarra Fitzroy catchment. Indigenous-led sectors—including Aboriginal tourism, carbon farming, and bush foods—have substantial growth potential but remain constrained by underinvestment in workforce development, governance, and supporting infrastructure. A 2021 Curtin University study demonstrates that expanding the conservation estate offers a clear economic opportunity. The study estimated that establishing national parks in parts of the Fitzroy Valley could generate around 160 additional full-time equivalent tourism jobs and attract between \$13 million and \$43 million in additional annual visitor expenditure. Redirecting investment towards protected areas and Indigenous-led enterprises would not only

⁸ Connor, J., Regan, C., Mr, T., & Nicol. (2019). Environmental, cultural and social capital as a core asset for the Martuwarra (Fitzroy River) and its people Report prepared for Internal Contributors.

support biodiversity conservation but also deliver more resilient, locally based, and culturally grounded economic outcomes than irrigation has achieved.⁹.

Too often failed attempts at irrigated agriculture in northern Australia (frequently subsidised by the Australian taxpayer) have harmed the natural flow regimes of rivers, while leaving communities and the environment to suffer the consequences¹⁰.

Recognising development pressure on freshwaters of the Martuwarra Fitzroy, the Fitzroy River Declaration was signed by Traditional Owners in 2016¹¹. The declaration calls for recognition of the river as a living ancestral being and “must be protected for current and future generations, and managed jointly by the Traditional Owners of the river.” The Declaration calls for the immediate design and implementation of a Martuwarra Fitzroy River Catchment Management Plan, a statutory buffer zone prohibiting industrial development, and moratorium on water licences until a suitable plan is in place.

Seven years later, in 2023 the West Australian government recognised the need to protect the river system from threats of damming and direct pumping from the river. The government established the following policy commitments:

- A. No new dams on the Fitzroy River or its tributaries.
- B. No additional surface water licences to be issued, except for essential public purposes.
- C. Sustainable groundwater take only
- D. Establishment of a Fitzroy Aboriginal Water Reserve.
- E. Traditional Owner involvement in providing advice for water planning and licensing.
- F. Commitment to establishing a regional advisory group.

⁹ Volgger, M., Pforr, C., Taplin, R., Dockery, M., & Cavalcanti Marques, S. (2021). Assessing tourism potentials in the Fitzroy Valley: Promoting sustainable Indigenous tourism development in WA’s Kimberley region. Tourism Research Cluster, Curtin University.

¹⁰ Doupé, R., & Pettit, N. (2002). Ecological perspectives on regulation and water allocation for the Ord River, Western Australia. *River Research and Applications*, 18, 307–320. <https://doi.org/10.1002/rra.676>

Head, L. (1999). The Northern Myth Revisited? Aborigines, environment and agriculture in the Ord 30 River Irrigation Scheme, Stages One and Two. *Australian Geographer*, 30(2), 141–158. <https://doi.org/10.1080/00049189993684>

¹¹ Traditional Owners of the Fitzroy River Catchment Area. (2016, November 3). *Fitzroy River Declaration*.

<https://d3n8a8pro7vbm.cloudfront.net/environskimberley/pages/303/attachments/original/1512653115/fitzroy-river-declaration.pdf>

G. Minimising impacts on ecological, cultural, and social values from all developments.

H. Transparent alignment of water licensing with other regulatory decisions.

The policy commitment, particularly the prohibition of dam construction and surface water extraction, has been widely acknowledged by the Kimberley community as an extremely positive step in respecting the river.

Emerging from these commitments is the draft Fitzroy Derby Water Resources Management Plan which develops policy for groundwater allocations to industry. The Plan claims to be:

A. A 'precautionary' approach to groundwater allocation in the Fitzroy Valley

B. A 'protective measure' that supports the Kimberley environment and Aboriginal cultural heritage

C. A plan 'based on feedback from Traditional Owners'

Our analysis of the draft Plan, as set out in this submission, finds that it falls short of adequately safeguarding freshwater ecosystems and is undermined by limited scientific rigour, weak enforceable protections, poor transparency, and insufficient long-term investment in environmental stewardship.

It therefore does not provide a robust foundation for ecologically sustainable, climate-resilient water allocations.

Ecological values of the Martuwarra Fitzroy River and risks to its future

The Martuwarra Fitzroy River is one of Australia's last principally unregulated rivers and is globally recognized as a centre of high biodiversity. As a "Living River"¹² of national and international significance, it supports 42 native fish species, including the world's most vital population of the critically endangered Freshwater Sawfish. The Martuwarra Fitzroy and its floodplain was added to the National Heritage List in 2011.

A "Living River" system is a single, interconnected organism encompassing the main river channel, vast floodplains, groundwater aquifers, and springs. The integrity of this entire system relies on hydrological connectivity and the vital exchange of water, nutrients, and species between surface and subsurface flows.

¹² RiverOfLife, M., Poelina, A., Bagnall, D., & Lim, M. (2020). Recognizing the Martuwarra's First Law Right to Life as a Living Ancestral Being. *Transnational Environmental Law*, 9(3), 541–568. Cambridge Core. <https://doi.org/10.1017/S2047102520000163>

During the monsoon, flood pulses inundate the floodplains, recharging regional aquifers and filling off-channel wetlands essential for biological productivity. During the dry season, groundwater-fed deep pools and springs (jila) act as essential refugia for species such as Barramundi, Cherabin, and Fork-tailed Catfish¹³. The vast floodplains are integral to the system's productivity; for instance, the Camballin floodplain serves as an internationally significant refuge for breeding and migratory waterbirds, and the floodplains have been shown to be fundamental to the life cycles of Cherabin¹⁴. Riparian zones along the main river channel support dense forests of River Red Gum, Silver-leafed Melaleuca, and Freshwater Mangrove, which provide critical habitat for the endangered Purple-crowned Fairy-wren¹⁵. At the river's delta, King Sound contains one of the world's most species-rich tidal flat ecosystems with 13 mangrove species and seagrass beds that support dugongs and green turtles¹⁶. The river's health is sustained by these complex interactions¹⁷.

Disrupting these complex connections through over-extraction, land-clearing and floodplain infrastructure threatens the system's resilience, cultural heritage, and survival. The Kimberley is one of the Earth's last great natural places, retaining the largest remaining tropical savannah on the planet¹⁸. Notably, the North Kimberley

¹³ DWER. (2023b). Mapping aquatic groundwater-dependent ecosystems in the Fitzroy water planning area (No. 35; Environmental Water Report Series). Department of Water and Environmental Regulation, Government of Western Australia.

https://www.wa.gov.au/system/files/2023_10/mapping-aquatic-gde-in-the-fitzroy.pdf

Sheldon, F., Bunn, S., Hughes, J., Arthington, A., Balcombe, S., & Fellows, C. (2010). Ecological roles and threats to aquatic refugia in arid landscapes: Dryland river waterholes. *Marine and Freshwater Research*, 61, 885–895. <https://doi.org/10.1071/MF09239>

¹⁴ Beesley, L. S., Killerby-Smith, S., Gwinn, D. C., Pusey, B. J., Douglas, M. M., Novak, P. A., Tayer, T. C., Keogh, C. S., Kennard, M. J., Canham, C. A., & Setterfield, S. A. (2023). Modelling the longitudinal distribution, abundance, and habitat use of the giant freshwater shrimp 28 (*Macrobrachium spinipes*) in a large intermittent, tropical Australian river to inform water resource policy. *Freshwater Biology*, 68(1), 61–76. <https://doi.org/10.1111/fwb.14009>

DEC. (2009). Resource Condition Report for a Significant Western Australian Wetland, Le Lievre Swamp (Iljamalkarda) [Prepared for the Inland Aquatic Integrity Resource Condition Monitoring (IAI RCM) Project]. Department of Environment and Conservation. <https://library.dbca.wa.gov.au/static/FullTextFiles/024965.pdf>

¹⁵ Skroblin, A., & Legge, S. (2012). Influence of fine-scale habitat requirements and riparian degradation on the distribution of the purple-crowned fairy-wren (*Malurus coronatus coronatus*) in northern Australia. *Austral Ecology*, 37(8), 874–884. <https://doi.org/10.1111/j.1442-9993.2011.02331.x>

¹⁶ DWER. (2023a). Ecological water requirements of water-dependent ecosystems in the Fitzroy water planning area (No. 34; Environmental Water Report Series). Department of Water and Environmental Regulation, Government of Western Australia.

<https://www.wa.gov.au/system/files/2023-10/ecological-water-requirements-fitzroy-water-planning-area.pdf>

Hayes, M., Jesse, A., Welts, N., Tabet, B., Lockington, D., & Lovelock, C. (2018). Groundwater enhances above-ground growth in mangroves. *Journal of Ecology*, 107. <https://doi.org/10.1111/1365-2745.13105>

¹⁷ Everard, M., & Powell, A. (2002). Rivers as living systems. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 12(4), 329–337. <https://doi.org/10.1002/aqc.533>

¹⁸ Williams, B. A., Watson, J. E. M., Beyer, H. L., Grantham, H. S., Simmonds, J. S., Alvarez, S. J., Venter, O., Strassburg, B. B. N., & Runting, R. K. (2022). Global drivers of change across tropical savannah ecosystems and insights into their management and conservation. *Biological Conservation*, 276, 109786. <https://doi.org/10.1016/j.biocon.2022.109786>

is the only Australian mainland region to have had no mammal extinctions, making it a unique refuge for marsupials found nowhere else¹⁹.

The Martuwarra Fitzroy River and the broader Kimberley are facing unprecedented pressure from climate change and industrial development. Rising temperatures, more frequent and prolonged heatwaves, changing rainfall patterns, and sea-level rise threaten the resilience of freshwater ecosystems and the dry-season refuges on which many species depend. At the same time, proposals for expanded mining and a substantial increase in groundwater extraction for irrigated agriculture risk compounding these impacts. Together, these pressures pose a significant risk to the ecological integrity of the Kimberley's rivers, floodplains, wetlands, springs, and groundwater-dependent ecosystems.²⁰

This submission makes recommendations to the draft Plan, identifying key risks to the Martuwarra Fitzroy River and its waters and makes recommendations for measures going forward to best protect it.

Strengthen Protections for the River, Recommendations 1-4, 17

Enable appropriate governance

Western Australia's water regulatory environment is primarily governed by the *Rights in Water and Irrigation Act 1914*, a framework that is an outdated, 112-year-old instrument and inappropriate for contemporary challenges. The Act does not provide adequate environmental protections or recognise the statutory authority of Traditional Owners over water planning. Instead, it creates a system that disproportionately empowers licence holders while leaving the state's most significant river systems, like the Martuwarra, vulnerable to harmful industrial development²¹.

Establishing a statutory governance body with shared decision-making authority is essential to reversing Aboriginal water dispossession and upholding First Law. The current draft Plan relegates Traditional Owners to advisory roles, rather than genuine co-governance.

¹⁹ Radford, I. J., Dickman, C. R., Start, A. N., Palmer, C., Carnes, K., Everitt, C., Fairman, R., Graham, G., Partridge, T., & Thomson, A. (2014). Mammals of Australia's tropical savannas: A conceptual model of assemblage structure and regulatory factors in the Kimberley region. *PloS One*, 9(3), e92341. <https://doi.org/10.1371/journal.pone.0092341>

²⁰ van Dam, R., Bartolo, R., & Bayliss, P. (2008). Chapter 2 Identification of ecological assets, pressures and threats (pp. 14–161).

²¹ Gardner, A., & Roberts, A. (2005). Challenges for the management of water resources in Western Australia: A legal response to findings of the public sector performance report, 2003. *Environmental and Planning Law Journal*, 22(1), 40–54.

A statutory governance body must possess legally enforceable oversight powers, including the right to formal consent or veto over all water licences and infrastructure projects that threaten the river and its connected ecosystems (GDEs, floodplains, tidal zones). Such a mandate is necessary because the archaic 1914 RIWI Act fails to recognise Aboriginal water rights or mandate cultural safeguards. A statutory authority would empower Traditional Owners as the primary holders of knowledge, integrating Indigenous science into the planning framework. Furthermore, this body would ensure that extraction remains within sustainable limits to protect sacred springs (jila) and dry-season refugia.

Licensing Conditions: monitoring, compliance, transparency and enforcement

A 2025 performance audit by the WA Auditor General into the regulation of water licences revealed a broken system, finding that the Department of Water and Environmental Regulation (DWER) is "not doing anywhere near enough" to protect resources. The Auditor General's Office revealed that 87% of potential non-compliance incidents were never assigned for investigation, highlighting a near-total collapse in enforcement. On-ground inspections plummeted by 67% during the audit period, leaving some regions with zero site visits in 2023-24. Consequently, the regulator relies heavily on unverified, self-reported data from licence holders rather than independent monitoring or telemetry, and the regulatory system utilises vague policy language that grants excessive discretion to individual officers rather than mandating clear environmental standards²².

Water governance in the Kimberley requires a licencing system that is enforceable, transparent, and capable of ensuring that extraction remains within sustainable limits. Existing licencing frameworks have been criticised for relying on administrative discretion, limited real-time monitoring, and incomplete reporting of actual water take, increasing the risk of cumulative over-extraction and delayed detection of non-compliance.

In a highly connected systems such as the Martuwarra Fitzroy River and associated aquifers, ecological impacts may emerge over large spatial scales and time lags due to the nature of groundwater connectivity. As a result, sustainable management depends not only on setting appropriate allocation limits in water management plans, but also on ensuring licence conditions actively enforce those limits in real time.

Strengthened licence conditions are therefore essential to operationalise the precautionary principle. Without enforceable thresholds, mandatory metering, and transparent reporting, allocation frameworks may fail to

²² OAG. (2025). Regulation of Water Licences: Performance audit (No. 20). Office of the Auditor General for Western Australia. https://audit.wa.gov.au/wp-content/uploads/2025/06/Report_20_Regulation-of-Water-Licences.pdf

prevent exceedances or detect cumulative impacts. Real-time telemetry, public water accounting, and independent verification are necessary to align licenced entitlements with actual water use.

There is also growing recognition that effective governance must include Traditional Owner participation in monitoring, compliance, and decision-making, reflecting cultural authority and improving accountability. Co-regulatory arrangements can enhance both legitimacy and data quality.

Finally, international and Australian experience shows that strong enforcement, transparent reporting, and robust compliance systems are critical to sustainable water management²³. Standardised licence conditions are therefore required to ensure water allocation limits are translated into measurable, enforceable, and publicly accountable outcomes.

Floodplain harvesting

Floodplain Harvesting (FPH) is a form of water extraction that relies on the reengineering of floodplain ecosystems via levee banks, block banks and on-farm storages, interrupting overland flows *before* they arrive in the river channel. Not only does FPH degrade the environmental value of floodplains, but it also enables large volumes of water to be extracted from the river system. Growth in floodplain harvesting in northern NSW has resulted in 778 billion litres diverted from the rivers annually²⁴, contributing to mass fish kills, toxic algal blooms, blackwater events and catastrophic drying²⁵.

Alarmingly, the Government's current stated position is that floodplain harvesting, as a form of water take, is subject to little or no regulation, with large volumes of water able to be diverted without effective licencing measures or regulatory oversight²⁶.

²³ Colloff, M. J., Lanyon, K., Pittock, J., Belt, M. C. den, Wheeler, S. A., Grafton, R. Q., Williams, J., Sheldon, F., Kingsford, R. T., Bino, G., Renzullo, L. J., & Moggridge, B. J. (2024). Murky waters running clearer? Monitoring, reporting and evaluation of the state of the Murray–Darling Basin after more than three decades of policy reform. *Marine and Freshwater Research*. <https://api.semanticscholar.org/CorpusID:274409929>

²⁴ Brown, P., Colloff, M. J., Slaterry, M., Johnson, W., & Guarino, F. (2022). An unsustainable level of take: On-farm storages and floodplain water harvesting in the northern Murray-Darling Basin, Australia. *Australian Journal of Water Resources*, 26(1), 43–58. <https://doi.org/10.1080/13241583.2022.2042061>

²⁵ Schulz, D. (2026). The politics of sacrifice in the Baaka-Darling river and Menindee Lakes, Australia. *Water Security*, 28, 100196. <https://doi.org/10.1016/j.wasec.2026.100196>

²⁶ Pers. Comm.

FPH threatens the river's integrity by disrupting vital wet-season flood pulses. These flow pulses are essential for recharging regional aquifers and maintaining hydrological connectivity with off-channel wetlands. During inundation, organic matter on floodplains is processed by microbial communities, generating a pulse of primary productivity through bacteria and phytoplankton. This in turn supplies a significant energy subsidy to the river system and underpins food-web dynamics²⁷. Irrigation proponents have recently commented that floodwaters returning to the river are 'wasted'²⁸ but for the critically endangered Freshwater Sawfish they are vital. Studies of population resilience show high-water events are critical for sawfish recruitment²⁹. Floodplain harvesting has the real possibility to reduce the frequency of these specific hydrological triggers, risking population collapse.

Furthermore, physical infrastructure associated with FPH also acts as a barrier to fish migration during floodplain inundation where native species access floodplain environments for breeding, feeding and refuge. For instance, levee banks at the Camballin floodplain have been the site of mass sawfish deaths who died trapped behind irrigation works (detail about sawfish deaths are discussed later in this document). Furthermore, reduced aquifer recharge from floodplain harvesting directly threatens sacred springs (jila) and refugial pools that sustain biodiversity during the long dry season.

Floodplain harvesting is a serious threat to the Martuwarra Fitzroy River and constitutes a major gap in the government's commitment to 'no further surface water take' and 'no dams' in the catchment. To adequately protect the river system from overextraction there must be legislated prohibition of floodplain harvesting for irrigated agriculture in the Plan area.

Surface water harvest and Snake Creek (Uralla creek)

Current surface water licences for irrigation are limited to one licence at Liveringa Station of 6 gigalitres (GL) per annum from Snake Creek (Uralla Creek), a vital dry-season refuge for fish and crocodiles³⁰. The 6 GL/year surface water licence at Liveringa Station pastoral lease is held by Northern Australia Pastoral Properties Pty

²⁷ Robertson, A., Bunn, S., Boon, P., & Walker, K. (1999). Sources, sinks and transformations of organic carbon in Australian floodplain rivers. *Marine and Freshwater Research*, 50, 813–829. <https://doi.org/10.1071/MF99112>

²⁸ Borrello, E. (2017, July 1). Gina Rinehart pushes for greater access to water from Kimberley's Fitzroy River. ABC News. <https://www.abc.net.au/news/2017-07-01/gina-rinehart-looking-to-draw-more-water-from-the-fitzroy/8668850?utm>

²⁹ Karissa, O. L., Gleiss, A. C., Whitty, J. M., Fazeldean, T., Albert, J. R., Green, N., Ebner, B. C., Thorburn, D. C., Beatty, S. J., & Morgan, D. L. (2019). Recruitment of a critically endangered sawfish into a riverine nursery depends on natural flow regimes. *Scientific Reports*, 9(17071). <https://doi.org/https://doi.org/10.1038/s41598-019-53511-9>

³⁰ Morgan, D. L., & Beatty, S. J. (2010). Interannual variation of the fish fauna associated with Snake (Uralla) Creek, Fitzroy River, Kimberley, Western Australia.

Ltd (NAPP), a wholly owned subsidiary of Hancock Agriculture (Hancock Prospecting), while the pastoral operations at the station are conducted by Liveringa Station Beef Pty Ltd under the same corporate ownership. While historic extraction was below 1 GL, take increased to 1-2 GL after 2015 following the installation of deep-set pumps and floodgate infrastructure. Reports from Traditional Owners and recreational fishers indicate that intensified water extraction since 2015 has resulted in the worst conditions observed in Snake Creek in more than 40 years, with recreational fishing areas and boat ramps frequently reduced to dry creek beds.

The most catastrophic impact has been recurrent mass fish deaths, particularly affecting the critically endangered Freshwater Sawfish. In 2018, 46 sawfish died in a drying tributary; another 17 deaths were reported in 2023. In 2019, 42 Barramundi were found dead in Snake Creek after water quality due to drying pools deteriorated, causing a low dissolved oxygen event.

River pools impacted by extraction become shallow and stagnant, can lead to thermal stratification and hypoxia, killing aquatic life³¹. Similar conditions have seen over a million native fish die in the Baaka-Darling River at Menindee in 2018/2019, one of the largest rivers in the Murray-Darling Basin. Subsequent investigations by independent experts found that irrigated agriculture and poor management had exacerbated natural drought conditions, causing longer more frequent cease to flow periods, ultimately leading to the death of the fish³².

In response to the barramundi deaths a DWER spokesperson stated that “water quality investigations found low oxygen levels from the bottom of Durack Pool created by the extended dry season had been stirred up by recent rains... Large and sensitive fish, such as barramundi, are known to be particularly susceptible to low dissolved oxygen.”³³ There were no recorded rain events during that time.

As observed in the Murray–Darling Basin, official explanations for fish kills that attribute events solely to drought or natural climatic variability can have the effect of normalising ecological decline and obscuring the contribution of water extraction and management decisions. Such narratives risk framing severe ecological

³¹ DWER. (2020a). An assessment of hydrological connectivity along the Uralla Creek and the Blina Creek Floodplain in the Fitzroy catchment. Department of Water and Environmental Regulation.

³² Australian Academy of Science. (n.d.). Investigation of the causes of mass fish kills in the Menindee Region NSW over the summer of 2018–2019. Retrieved www.science.org.au/fish-kills-report

³³ Department of Water and Environmental Regulation. (2020, October 19). *Extended dry season cause of fish kill incident at Snake Creek*. Government of Western Australia. <https://www.wa.gov.au/government/announcements/extended-dry-season-cause-of-fish-kill-incident-snake-creek>

degradation as an unavoidable feature of dryland rivers, rather than as the consequence of policy choices that permit extractive pressure on freshwater ecosystems³⁴.

Although fish kills were recorded in 2016, 2018, and 2019, the Department of Water and Environmental Regulation (DWER) maintains that the licensee is operating within its conditions. This highlights a fundamental failure in the regulatory and monitoring framework. Furthermore, the lack of baseline data and streamflow monitoring makes it nearly impossible for authorities to conduct a defensible assessment of how irrigation is directly destroying the health of Snake Creek.

In light of these concerns, and DWER's failure to adequately address them, we recommend that the 6 GL surface water licence held by NAPP not be renewed upon its expiry, thereby phasing out the entitlement.

Lower Groundwater Allocation Limits, Recommendation 5

To retain ecological integrity, no largescale extraction of groundwater should occur. The draft Plan and the reports that inform it have not determined safe levels of groundwater extraction from the region's aquifers, and the draft Plan's proposed allocations present an unacceptable risk to the region's ecological integrity. Scientific baseline data on groundwater systems across the Plan area is currently insufficient to support robust, defensible allocation decisions for irrigation activities.

However, with a comprehensive management plan for groundwater resources not currently in place, there is a need to provide interim policy guidance on groundwater allocation limits. Until baseline data is improved, a precautionary approach to setting these limits should be adopted. While percentage of recharge has been shown to be a flawed methodology for allocation planning (discussed below), we have applied this methodology following a broad-scope risk analysis, resulting in a suitably precautionary approach that:

- A. Limits groundwater allocations to no more than 5% of estimated recharge across the Plan area until more robust scientific data becomes available.
- B. Establishes in the Plan an individual licence cap of 1 GL/year for irrigated agricultural licences until more robust scientific data becomes available.

Groundwater Extractions and the draft Plan's allocation limits

³⁴ Schulz, D. (2026). The politics of sacrifice in the Baaka-Darling river and Menindee Lakes, Australia. *Water Security*, 28, 100196. <https://doi.org/10.1016/j.wasec.2026.100196>

The proposed methodology for groundwater allocation in the draft Plan is based on allocating up to 40% of estimated annual groundwater recharge using the concept of "safe yield". Peer-review scientific literature suggests the "safe yield" approach is no longer regarded as best practice because it assumes groundwater systems function as simple storage reservoirs and fails to account for the environmental water needed to sustain rivers, springs, wetlands, riparian vegetation and groundwater-dependent ecosystems. Contemporary approaches to water planning and allocation demonstrate that recharge alone is not a reliable indicator of environmentally sustainable extraction, particularly in highly variable monsoonal systems such as the Kimberley³⁵.

Significant scientific uncertainties remain regarding groundwater recharge, hydraulic connectivity between aquifers, groundwater contributions to river baseflow and springs, ecological water requirements, and the cumulative impacts of multiple extraction bores. More than 400 mapped springs occur across the region, yet little is known about the groundwater sources and pressures required to sustain them.

Furthermore, CSIRO modelling has demonstrated that groundwater drawdown can extend tens of kilometres from individual extraction bores, meaning industrial-scale pumping has the potential to affect groundwater-dependent ecosystems far beyond licence boundaries³⁶. The cumulative impacts of multiple extraction points are unknown.

Rather than justifying larger allocations, these uncertainties strengthen the need for a truly precautionary approach that safeguards freshwater ecosystems. In the absence of robust baseline data, clearly defined ecological thresholds, and enforceable adaptive management triggers, groundwater allocation limits should be reduced below those proposed in the draft Plan to minimise the risk of irreversible impacts on the Martuwarra Fitzroy.

³⁵ Alley, W. M., & Leake, S. A. (2004). The Journey from Safe Yield to Sustainability. *Groundwater*, 42(1), 12–16.

<https://doi.org/10.1111/j.1745-6584.2004.tb02446.x>

Bredehoeft, J. (1997). Safe Yield and the Water Budget Myth. *Groundwater*, 35(6), 929–929. <https://doi.org/10.1111/j.1745-6584.1997.tb00162.x>

³⁶ Dawes, W., Taylor, A., Harrington, G., & Davies, P. (2018). Groundwater flow modelling of the Grant Group and Poole Sandstone aquifer – Fitzroy Trough, Western Australia. A technical report to the Australian Government from the CSIRO Northern Australia Water Resource Assessment, part of the National Water Infrastructure Development Fund: Water Resource Assessments. CSIRO, Australia. <https://doi.org/10.25919/5B86ED8EBC095>

Comparison of Alternative Groundwater Allocation Limits

The draft Plan proposes groundwater allocation limits equivalent to approximately 40% of estimated annual recharge for the Grant Poole and Wallal aquifers. This represents a significant increase in water available for extraction compared with current use. Given the internationally recognised ecological significance of the Martuwarra Fitzroy River, substantial scientific uncertainty regarding groundwater processes, and the extensive dependence of rivers, wetlands and groundwater-dependent ecosystems on groundwater discharge, a more precautionary allocation framework should be adopted.

A lower allocation limit is justified for several reasons:

- A. **High scientific uncertainty** remains regarding recharge rates, groundwater–surface water interactions, ecological water requirements, aquifer connectivity and groundwater discharge to the Martuwarra and associated wetlands.
- B. **Groundwater-dependent ecosystems are extensive**, with more than 45,000 hectares of mapped groundwater-dependent wetlands, springs, riparian vegetation and aquatic ecosystems supported by these aquifers.
- C. **Groundwater sustains dry-season river flows**, permanent refugial pools and nationally significant habitat for threatened species including the Freshwater Sawfish, as well as riparian vegetation and estuarine ecosystems extending to King Sound.
- D. **Groundwater drawdown extends over large distances**, with CSIRO modelling indicating pressure changes may extend 20–36 km from production bores, increasing the likelihood of cumulative regional impacts.
- E. **Ecological responses may be non-linear**, with relatively small groundwater declines capable of substantially reducing spring discharge and affecting groundwater-dependent ecosystems.
- F. **Current demand does not justify the proposed allocation volumes**. Existing groundwater use remains well below the proposed limits, and even projected agricultural development requiring substantially less water than the volumes proposed in the draft plan.

Applying the Department of Water's Risk-based Method for Setting Groundwater Allocation Limits (2011)³⁷ to the Fitzroy catchment supports a substantially more precautionary allocation than the proposed 40% of recharge.

Allocation Scenario	Recharge Allocation	Grant Poole Aquifer (GL/year)	Wallal Aquifer (GL/year)	Reduction from Draft Plan
Draft Plan	40%	22.8	33.2	—
Moderate Precautionary	10%	5.7	8.3	75% reduction
High Precautionary	5%	2.85	4.15	87.5% reduction

Until comprehensive hydrogeological investigations, ecological thresholds, long-term monitoring and adaptive management frameworks are established, groundwater allocation limits should adopt a precautionary approach. A 10% recharge allocation (5.7 GL/year for Grant Poole and 8.3 GL/year for Wallal) would provide substantial capacity for future development while reducing ecological risk. A 5% recharge allocation (2.85 GL/year and 4.15 GL/year respectively) would represent a highly precautionary interim limit consistent with best-practice groundwater management in environmentally sensitive catchments and could be reviewed as scientific understanding improves.

Assessing ‘cap’ thresholds for individual licences

The draft Plan proposes a staged development approach to groundwater licensing as a precautionary measure. During the consultation period, departmental staff advised that an individual licence cap of approximately 3 GL is being considered as part of this approach³⁸.

However, the allocation methodology for the 3GL ‘cap’ does not adequately incorporate the spatial extent or cumulative impacts of groundwater drawdown, and therefore risks underestimating the ecological consequences of extraction. In particular, the absence of detailed, spatially explicit understanding of groundwater-dependent ecosystems, including 400 mapped springs of high ecological and cultural value and many hundreds unmapped, means that the full scale of potential impacts remains unknown. Of the 112-page Ecological water requirements report produced by DWER, only 1.5 pages is on springs, and states that further

³⁷ DWER. (2011). Groundwater risk-based allocation planning process (No. 45; Water Resource 29 Allocation and Planning Series).

³⁸ Pers. Comm.

local studies would be required to establish environmental water characteristics of springs required to inform the risk of groundwater extraction proposals³⁹.

Hydrogeological research demonstrates that groundwater extraction produces ‘cones of depression’ that can extend significant distances beyond the point of extraction. Evidence from CSIRO NAWRA modelling of the Grant Poole aquifer shows that a 5 GL/year extraction scenario can generate a drawdown contour of approximately 1.5 metres up to 10 km from pumping sites, with impacts extending beyond 20 km under higher extraction scenarios. At 20 GL/year, drawdowns exceeding 4 metres were observed at distances of 10 km from extraction points⁴⁰.

These findings indicate that groundwater extraction at industrial irrigation scales has the potential to affect groundwater-dependent ecosystems across very large spatial areas, with a high likelihood of cumulative and overlapping cones of depression. When applied across a densely distributed network of springs and dependent ecosystems, the cumulative impacts have the potential to be catastrophic. The ecological risk increases further when considering high interannual variability in recharge, which limits system resilience and increases the likelihood of long-term drawdown in dry periods.

Under these conditions, allocation limits must be based on a precautionary risk framework that explicitly accounts for:

- A. the spatial extent of cones of depression
- B. cumulative drawdown effects across multiple bores
- C. protection of groundwater-dependent ecosystems and cultural values
- D. interannual variability in recharge and climate conditions

A precautionary interpretation of the available evidence suggests that ecological risk remains high wherever ‘cones of depression’ extend beyond approximately 2 km, given the likelihood of intersecting and cumulative impacts across groundwater-dependent ecosystems. On this basis, extraction volumes associated with large-

³⁹ DWER. (2023a). Ecological water requirements of water-dependent ecosystems in the Fitzroy water planning area (No. 34; Environmental Water Report Series). Department of Water and Environmental Regulation, Government of Western Australia. <https://www.wa.gov.au/system/files/2023-10/ecological-water-requirements-fitzroy-water-planning-area.pdf>

⁴⁰ Dawes, W., Taylor, A., Harrington, G., & Davies, P. (2018).

scale irrigated agriculture (including 3 GL/year licences) present an unacceptably high risk to surrounding ecosystems.

Distance from bore	Indicative extraction scenario	Expected drawdown impact	Likely interaction with groundwater-dependent ecosystems	Risk rating
30 km	~20 GL/year scenario (outer model extent)	Detectable regional pressure decline; extended cone of depression footprint	High likelihood of intersecting regional groundwater-dependent ecosystems and springs	High
20 km	~5–20 GL/year scenario	Moderate to significant drawdown depending on cumulative extraction	High likelihood of cumulative impacts on distributed spring systems and wetlands	High
10 km	~5 GL/year scenario	~1.5 m drawdown observed in modelling; higher under 20 GL/year (>4 m in some cases)	Direct risk to groundwater-dependent ecosystems; high probability of ecological stress or drying	High
5 km	Localised pumping influence zone	Strong drawdown gradients likely; intensity dependent on bore density and recharge	Likely impact on nearby springs and shallow groundwater systems	Moderate
2 km	Immediate bore influence zone	Maximum drawdown and strongest hydraulic pressure changes	Direct and highly probable impacts on connected groundwater-dependent ecosystems	Low–Moderate (locally high, but spatially limited under precautionary cap)

To reduce the likelihood of widespread and cumulative ecological harm, we recommend the adoption of a precautionary cap of 1 GL/year per individual licence. This limit reflects a risk-reduction approach designed to constrain the spatial footprint of drawdown, reduce the likelihood of overlapping cones of depression, and protect groundwater-dependent ecosystems while baseline ecological and hydrogeological data is improved.

Hydraulic fracturing (fracking) and its threat to groundwater sustainability, Recommendation 6

The threats of hydraulic fracturing (fracking) to the water resources of the Fitzroy catchment and its aquifers are imminent. Black Mountain Energy (Bennett Resources) Valhalla Gas Exploration and Appraisal Program is undergoing assessment by the Commonwealth because of potential impacts on nationally protected matters, including water resources, threatened species, and the National Heritage values of the West Kimberley. The proposal is also under assessment by the WA government. Large-scale shale gas development across the Canning Basin would place unprecedented pressure on the Martuwarra Fitzroy River and its connected aquifers

through both high-water demand and significant risks to the contamination of groundwater and surface water quality.

Hydraulic fracturing (fracking) requires substantial volumes of water to fracture deep shale formations. Industry estimates indicate that approximately 20 wells require around 2 gigalitres (GL) of water, equivalent to approximately 100 megalitres (ML) per well. While water use of individual wells may appear relatively modest, viable unconventional gas developments typically involve hundreds or thousands of wells constructed over several decades.

Number of Fracking Wells	Estimated Water Use (GL)
20	2
100	10
500	50
1,000	100
1,500	150

The WA Government’s draft Plan proposes groundwater allocation limits of ~75.7 GL. The scale of water required for a mature shale gas industry highlights the cumulative pressure that could be placed on the Fitzroy’s groundwater resources.

500 wells would require approximately 50 GL of water, approximately equal to the Government’s proposed combined groundwater allocation for the Grant Poole and Wallal aquifers in the Fitzroy subarea alone (56GL).

1,000 wells would require approximately 100 GL of water—around 44 GL more than the combined proposed allocation of 56 GL, or approximately 1.8 times greater.

1,500 wells would require approximately 150 GL of water, nearly three times the proposed combined groundwater allocation.

This comparison illustrates that a large-scale unconventional gas industry has the potential to become one of the largest industrial water users in the Fitzroy catchment.

Beyond water extraction, fracking also presents significant risks to water quality. Hydraulic fracturing fluids contain chemical additives, and water returning from deep geological formations is often highly saline and may

contain hydrocarbons, heavy metals and naturally occurring radioactive materials. Accidental spills, wastewater storage failures, pipeline leaks and well integrity failures all have the potential to contaminate groundwater and surface water.

Industrial development would also require hundreds or thousands of well pads, roads, pipelines, compressor stations and wastewater storage facilities distributed across the catchment. This infrastructure would fragment landscapes, increase erosion and sedimentation, and elevate the risk of contaminants entering waterways during the Kimberley's frequent flood events.

Despite these significant risks to the health of the Martuwarra Fitzroy River, the draft Plan does not adequately account for the potential water demands or contamination risks associated with hydraulic fracturing. Given the high scientific uncertainty, the nationally significant environmental and cultural values of the Martuwarra, and the potentially irreversible consequences of groundwater contamination, the precautionary principle strongly supports excluding large-scale unconventional gas development from the Fitzroy catchment.

Responding to Derby's water security crisis, Recommendations 7-9

To support Derby's growing water needs and agricultural interests, the draft Plan proposes to increase extractions across the Derby Peninsula and Great Derby regions by 205% (from 3,717,000 KL/Y to 11,330,000 KL/Y in the combined subareas).

Meanwhile, evidence shows the Derby Peninsula is already being **overextracted**, with current extractions from the lower Erskine aquifer (1.33 GL/y) exceeding the estimated annual throughflow (0.57 GL/y). While the Plan's groundwater allocations limit extractions from the Derby peninsula subarea to public uses only, it allocates large quantities of groundwater water from the Greater Derby region to expand irrigated agriculture and without a clear understanding of aquifer recharge and throughflow rates.

The DWER's understanding of aquifer recharge rates, throughflow rates and ground-surface water connections is rudimentary and are based on uncertain estimates of aquifer surface area. Throughflow is particularly critical for the Derby region due to saltwater intrusion that has progressively moved inland. Throughflow from the wider Derby region to the coast must provide enough pressure to maintain the location of the seawater interface, to avoid salinisation of Derby's groundwater.

Previously, the Wallal aquifer supported the original Derby town water supply but was abandoned in 2002 because of increasing saltwater intrusion. Following the abandonment of the Wallal bores, the Lower Erskine aquifer became the primary source for the town's water supply. The volume of water extracted on the Derby Peninsula subarea from the lower Erskine (1,330,000KL/Y), exceeds the estimated annual throughflow of the aquifer (approximately 570,000KL/Y), creating a significant risk of drawing the saltwater interface inland. Water Corporation's response to saltwater intrusion has been to move bores further inland. It is expected that if monitoring bores on the Derby Peninsula begin to show signs of saltwater intrusion in the confined Erskine aquifer, their bores will again be moved further inland. Currently, the Plan proposes a 'wait and see' approach to Derby's town water supply.

Despite evidence that aquifers in the Derby region are hydraulically linked, the plan ignores the potential impacts of increased extraction in the Greater Derby sub-area on groundwater levels in the Derby Peninsula and broader coastal region. Impacts on throughflow between the two regions are not considered within the draft Plan, and poor hydrological knowledge of the region may contribute to further overextraction and continued mismanagement of Derby's groundwater resources.

Applying the government's own allocation planning methodology outlined in the Departments guide for Risk-based Method for Setting Groundwater Allocation Limits (2011), the Plan should assess and allocate the Derby peninsula subarea as an R4 Intensive plan, requiring the commission of new studies to better inform the planning process, apply greater effort in modelling, monitoring and consultation, establish more complex management arrangements, including environmental water regimes to maintain resource assets and values, as well as impact management rules for licensees.

The management of saltwater intrusion and protection of groundwater is critical to the survival of coastal ecosystems in the Derby region and to the health of the Martuwarra Fitzroy River. Freshwater aquifers support a vital network of important ecosystems and cultural sites in the Derby region, including:

- A. **coastal ecosystems** along the Derby coastline. Mangroves and saltflats at the deltas of the Fitzroy and May rivers, Stokes Bay, Doctors and Point Torment creeks and throughout King Sound are likely dependent upon groundwater discharge from the Wallal resource. Mangroves are a crucial fish nursery

habitat, carbon sink and coastline stabiliser. Mangrove species supported by groundwater discharge (such as *Avicennia Excoecaria*) also protect against environmental stressors and pathogens⁴¹.

- B. groundwater springs and wetlands** across the Derby region are dependent on discharge from aquifers. Munkayarra wetlands is likely dependent upon groundwater discharge from the Wallal aquifer, while Yabbagoody, a highly significant ecological and cultural place in the greater Derby region is also probably supported by groundwater discharge. Yabbagoody supports protected flora (*Nymphoides beaglensis*)⁴², water lilies, and is an important habitat for waterbirds such as brolgas.
- C. stygofauna populations** in the Wallal resource are maintained by groundwater levels and pressure head is required to sustain habitat that supports these aquifer and subterranean ecosystems.
- D. seagrass beds in King Sound** are likely dependent on groundwater discharge for nutrient and are important for sediment stabilisation, green turtles, dugongs, carbon sink, and as a fish nursery.
- E. The 1,500-year-old Prison Boab Tree**, a highly significant Aboriginal cultural heritage site, is likely supported by groundwater.

Future proofing Derby's water source

We believe it is reasonable to expect the DWER to develop a robust plan, based on comprehensive groundwater modelling, to avoid a water crisis at Derby. This should be done through the current water allocation planning process and as soon as possible. This robust plan should provide a timeline for action and costed options for water source alternatives including the relocation of Water Corporation bores to a sustainable water source and options for water recycling and desalination. A robust plan for Derby's town water will provide stakeholders, the Derby community and the state government with greater certainty and transparency about Derby's water future.

Furthermore, the plan treats the Greater Derby and Derby Peninsula subareas as separate and applies vastly different allocation methodologies to each area. This is despite the fact the two subareas are hydraulically linked and geographically proximate. The Plan applies the 40% of recharge allocation methodology to the

⁴¹ Semeniuk, V. (1983). Mangrove distribution in Northwestern Australia in relationship to regional and local freshwater seepage. *Vegetatio*, 53(1), 11–31. <https://doi.org/10.1007/BF00039767>

⁴² Priority 2 as per the Western Australian conservation status assigned under the state's Priority Flora system.

Greater Derby subarea, despite the Derby peninsula being hydraulically dependent on throughflow from the Great Derby subarea. This poses an unacceptable risk to the groundwater resources of the Derby Peninsula.

No new licences for irrigated agriculture in the Derby Peninsula and Greater Derby subareas should be approved until the model demonstrates, based on the best available scientific evidence, that allocations will be sustainable.

Restoring and protecting the Martuwarra, Recommendations 10-14

The Camballin floodplain

The Camballin irrigation project was constructed in the 1950s with the aim of developing a large irrigated agricultural district based initially on rice production and later sorghum, cotton and other crops. The scheme included:

- A. The Fitzroy River Barrage (often called the Camballin Barrage).
- B. The Seventeen Mile Dam.
- C. Irrigation channels and levees.
- D. Floodplain water diversion infrastructure.
- E. The township of Camballin to service the development.

The project ultimately ceased operations after repeated flood damage and a major levee failure during flooding in 1983⁴³. A 2006 government-funded assessment found the Fitzroy River Barrage to be a major barrier to migration for several native fish species including the critically endangered freshwater sawfish, leading to “a bottleneck of predatory species that, in turn, affects the prevailing fauna and disrupts important ecological aspects of the system.”⁴⁴

⁴³ Lindsay, R. P., & Commander, D. P. (2006). *Hydrogeological assessment of the Fitzroy alluvium* (Hydrogeological Record Series HG 16). Department of Water, Government of Western Australia. <https://www.wa.gov.au/system/files/2022-04/Hydrogeological-assessment-of-the-Fitzroy-Alluvium.pdf>

⁴⁴ Morgan, D. L., & Gill, H. S. (2005). *Influence of the Camballin Barrage on fish communities in the Fitzroy River, Western Australia*. Murdoch University, Centre for Fish and Fisheries Research. https://www.researchgate.net/publication/254663124_Influence_of_the_Camballin_Barrage_on_fish_communities_in_the_Fitzroy_River_Western_Australia

The study found the Fitzroy River Barrage, on average (2002-2015), reduces the time that Freshwater Sawfish can move upstream by 184 days, constituting significant losses to population distribution, and recommended a feasibility study into the construction of a fishway at the Fitzroy River Barrage, including evaluation of hydrological impacts on the upstream pool and Snake Creek⁴⁵. While subsequent fishway reviews were undertaken, there is no available evidence that the recommended feasibility study has been initiated. In response, we recommend the Fitzroy River Barrage be removed to restore the Martuwarra Fitzroy River as a free-flowing river and improve population distribution and resilience of the critically endangered sawfish.

Additionally, legacy structures from the failed Camballin irrigation project should be removed and natural overland flows for the Camballin floodplain restored. Deaths of 17 sawfish trapped behind a levee bank on Liveringa station were reported in November 2023 and 46 sawfish deaths recorded in 2018. The floodplains of the Martuwarra-Fitzroy are critically important to many native fish species who use floodplains as seasonal habitat during inundation, with fish subsequently returning to river refuges as floodwaters recede. The government should commence efforts to remove these barriers.

In parallel to these efforts the government should commence work to progress nomination of the Camballin Floodplain ecosystem for Ramsar listing in accordance with Ramsar Convention requirements. Ramsar listing recognises wetlands of international importance and encourages their conservation through national commitments to maintain their ecological character, which in practice strengthens environmental protection and management. It can also enhance conservation value and ecotourism opportunities by raising a site's international profile and attracting visitors and investment in nature-based tourism, as demonstrated in Ramsar guidance and case studies showing increased tourism and associated local economic benefits following listing⁴⁶.

Establish a protective zone for the Martuwarra

Establishing a statutory 'buffer zone' across the floodplains of the Martuwarra Fitzroy River where all inundation occurs, is essential to safeguard its ecological and cultural integrity from industrial threats such as dams,

⁴⁵ Morgan, D. L., & Gill, H. S. (2005). *Influence of the Camballin Barrage on fish communities in the Fitzroy River, Western Australia*. Murdoch University, Centre for Fish and Fisheries Research.
https://www.researchgate.net/publication/254663124_Influence_of_the_Camballin_Barrage_on_fish_communities_in_the_Fitzroy_River_Western_Australia

⁴⁶ Ramsar Convention on Wetlands Secretariat. (2010). *Wise use of wetlands: Concept and implementation (Ramsar Handbook 1, 4th ed.)*. <https://www.ramsar.org/sites/default/files/documents/library/hbk4-01.pdf>

mining, and large-scale irrigation (appendix A). A buffer covering just 8.7% of the catchment can protect 90% of its vital floodplains, ensuring the hydrological connectivity necessary for species like the critically endangered Freshwater Sawfish. This protective ‘buffer’ was proposed in the 2016 Fitzroy River Declaration⁴⁷.

To establish this zone effectively, the WA Government must move beyond non-binding policy and legislate a statutory protection zone. Implementation must involve shared decision-making authority, integrating First Law and traditional ecological knowledge into the creation of the protection zone. By locking in these protections, the statutory protection zone fosters a regenerative economy, supporting sustainable development such as Aboriginal-led tourism, bush food harvesting, and carbon farming while preserving the river as a living ancestral being.

Establish National Parks along the full length of the river

A statutory protection zone should be complemented by a network of National Parks, providing an integrated framework for protecting the river's ecological, hydrological and cultural values (appendix A). The Western Australian Government has previously committed to establishing National Parks along the Fitzroy and Margeret Rivers through joint management with Traditional Owners. The establishment of Parks along the full length of the river would provide permanent legislative protection for the river corridor and its most important wetlands, springs, refugial waterholes and riparian ecosystems, supported by active conservation management and joint management with Traditional Owners. A 2021 report by Curtin University found that declaring parts of the Fitzroy Valley as a National Park could create approximately 160 additional full-time equivalent tourism-related jobs based on conservative figures. This development scenario is also projected to bring between \$13 million and \$43 million in extra annual tourism spending to the region⁴⁸.

Together, these complementary mechanisms would secure the long-term integrity of the Martuwarra Fitzroy River, protect natural flow regimes and freshwater biodiversity, and embed Traditional Owner stewardship at the centre of water and land management.

⁴⁷ Traditional Owners of the Fitzroy River Catchment Area. (2016, November 3). *Fitzroy River Declaration*.

<https://d3n8a8pro7vnm.cloudfront.net/environskimberley/pages/303/attachments/original/1512653115/fitzroy-river-declaration.pdf>

⁴⁸ Volgger, M., Pforr, C., Taplin, R., Dockery, M., & Cavalcanti Marques, S. (2021). Assessing tourism potentials in the Fitzroy Valley: Promoting sustainable Indigenous tourism development in WA's Kimberley region. Tourism Research Cluster, Curtin University.

Responding to Climate Change Threats, Recommendations 15-17

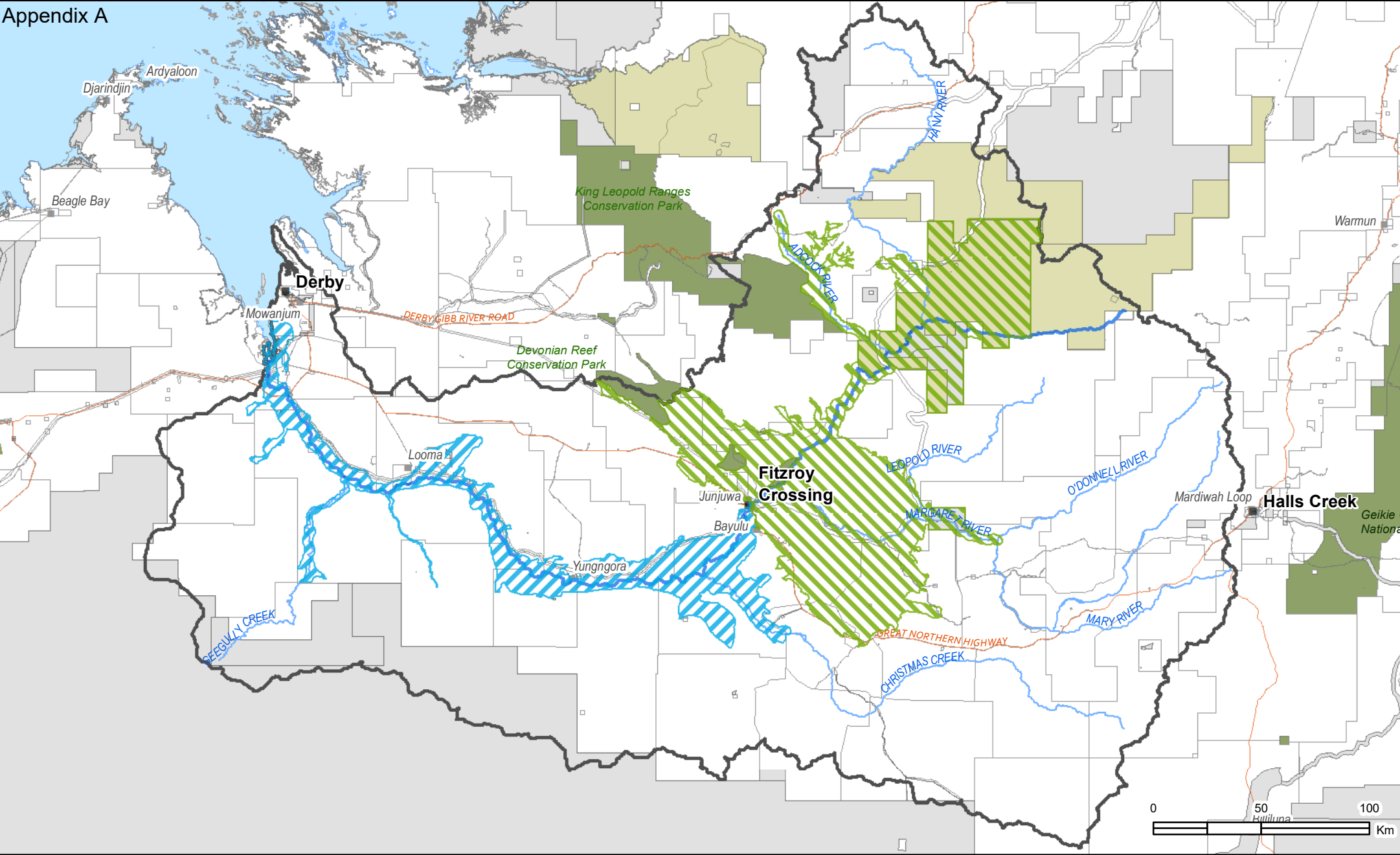
The Plan should respond to climate change by establishing a comprehensive regional groundwater and surface water monitoring network across the Fitzroy Catchment, and support Traditional Owners to monitor groundwater-dependent ecosystems. This should be immediately prioritised to monitor changes in freshwater ecosystems, detect the impacts of climate change and water extraction, and provide the evidence needed for adaptive water management.

This monitoring program should be world best standard and include:

- A. A comprehensive network of nested piezometer installations (sites with multiple bores screened across multiple aquifers or different depths within an aquifer) equipped with contemporary monitoring technologies, including automated water level loggers, telemetry, continuous water quality sensors where appropriate, and real-time data transmission. The network should be designed to monitor groundwater levels, pressures, quality, recharge, and aquifer connectivity, with data collected using nationally consistent standards. All monitoring data, metadata, and site information should be publicly accessible through a user-friendly, frequently updated online platform to support transparent, evidence-based water management and independent scientific assessment.
- B. A comprehensive network of automated hydrometric and multi-parameter water quality monitoring stations across the catchment, equipped with contemporary monitoring technologies, including continuous telemetry for water level, streamflow, water temperature, and key water quality indicators (such as dissolved oxygen, pH, electrical conductivity, turbidity and other site-specific ecological parameters). Monitoring stations should be strategically located to include ecologically important refuges, groundwater-dependent ecosystems, and key river reaches supporting aquatic biodiversity. All monitoring data, metadata, quality assurance information, and site documentation should be publicly accessible through a user-friendly, frequently updated online data platform using nationally consistent standards to support transparent, evidence-based water management, early detection of environmental change, and independent scientific assessment.
- C. A comprehensive database of Groundwater-Dependent Ecosystems (GDEs). This is critical to filling the current data vacuum, as the draft Plan was developed without baseline ecological or cultural studies. This mapping must be led by Traditional Owner groups (PBCs) to ensure that GDEs of cultural significance are accurately identified alongside their specific environmental water requirements.

Respecting Indigenous Data Sovereignty is paramount; Traditional Owners must retain absolute authority over how their cultural knowledge and data relating to Country are collected, accessed, and used.

- D. A region-wide water monitoring training program for PBCs and ranger groups. The current regulatory environment is prone to failure because it relies on unverified, self-reported data from licence holders in a remote region. Investing in local capacity for water quality testing, satellite imagery analysis, and ecosystem surveys empowers communities to detect emerging threats and report non-compliance in real-time. Building this enduring capability enables Traditional Owners to be an active, skilled workforce capable of responding effectively to the compounding pressures of climate change and industrial extraction.



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|  Fitzroy River Buffer Zone |  Main tributaries |  Main roads |  Existing Reserves |
|  Conservation Investigation Zone |  Fitzroy River catchment |  Pastoral leases |  Privately managed conservation areas |
|  Fitzroy River |  Towns / communities |  Unallocated Crown Land | |



Data Sources:
 Roads, towns, communities- Geodata topo 250K series 3. Commonwealth of Australia
 Fitzroy Catchment- Australian Hydrological Geospatial Fabric (Geofabric v2.1). Bureau of Meteorology
 IPAs- Department of the Environment and Energy and Department of the Prime Minister and Cabinet, 2018
 Reserves- Legislated Lands and Waters - Department of Biodiversity, Conservation and Attractions, Western Australia
 Pastoral Leases- Department of Agriculture and Food, Government of Western Australia