



Environmental
Defenders Office

**Submission to the Productivity Commission National
Water Reform 2024 – Interim Report**

24 April 2024

About EDO

EDO is a community legal centre specialising in public interest environmental law. We help people who want to protect the environment through law. Our reputation is built on:

Successful environmental outcomes using the law. With over 30 years' experience in environmental law, EDO has a proven track record in achieving positive environmental outcomes for the community.

Broad environmental expertise. EDO is the acknowledged expert when it comes to the law and how it applies to the environment. We help the community to solve environmental issues by providing legal and scientific advice, community legal education and proposals for better laws.

Independent and accessible services. As a non-government and not-for-profit legal centre, our services are provided without fear or favour. Anyone can contact us to get free initial legal advice about an environmental problem, with many of our services targeted at rural and regional communities.

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Submitted to:

National Water Reform 2024

Productivity Commission

Attention: Commissioner Joanne Chong and Associate Commissioner Anne Poelina

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Acknowledgement of Country

EDO recognises and pays respect to the First Nations peoples of the lands, seas and rivers of Australia. We pay our respects to the First Nations Elders past, present and emerging, and aspire to learn from traditional knowledges and customs that exist from and within First Laws so that together, we can protect our environment and First Nations cultural heritage through both First and Western laws. We recognise that First Nations Countries were never ceded and express our remorse for the injustices and inequities that have been and continue to be endured by the First Nations of Australia and the Torres Strait Islands since the beginning of colonisation.

EDO recognises self-determination as a person's right to freely determine their own political status and freely pursue their economic, social and cultural development. EDO respects all First Nations' right to be self-determined, which extends to recognising the many different First Nations within Australia and the Torres Strait Islands, as well as the multitude of languages, cultures, protocols and First Laws.

First Laws are the laws that existed prior to colonisation and continue to exist today within all First Nations. It refers to the learning and transmission of customs, traditions, kinship and heritage. First Laws are a way of living and interacting with Country that balances human and environmental needs to ensure the environment and ecosystems that nurture, support, and sustain human life are also nurtured, supported, and sustained. Country is sacred and spiritual, with culture, First Laws, spirituality, social obligations and kinship all stemming from relationships to and with the land.

Introduction

Environmental Defenders Office (**EDO**) welcomes the opportunity to provide a submission in relation to the Productivity Commission’s Interim Report on National Water Reform 2024 (**Interim Report**).¹ This supplementary submission builds upon the matters raised in our original submission to the inquiry dated 21 February 2024 (**February Submission**).²

This submission provides further comment specific to the Northern Territory (**NT**) in relation to the following areas:

1. Frameworks for allocating water outside plan areas; and
2. The NT Surface Water Take – Wet Season Flows Policy.

Frameworks for allocating water outside plan areas

In our February Submission, we raised concerns with the NT’s contingent allocation rules, which govern the setting of the consumptive pool for water allocation outside of areas where a Water Allocation Plan (**WAP**) exists and where “scientific research is not available”.³ We also noted that much of the NT is not covered by a WAP.

The Interim Report recommends that jurisdictions should continue to have discretion about whether a plan is necessary, and the effort put into its preparation (per NWI paragraph 38).⁴ However, where a plan is not prepared, “a renewed NWI should provide greater guidance on how contingent allocation frameworks are developed to be fit-for-purpose and appropriately manage the risk of overuse”.⁵ The Interim Report further recommends that where plans are not prepared, jurisdictions should publish a transparent justification of why “the costs of a plan outweigh the benefits” and “set clear triggers for developing a plan when circumstances change”.⁶

We remain concerned by the overreliance of the Northern Territory on contingent allocation frameworks in place of NWI-compliant plans, including for areas of very high ecological and cultural values and areas where industry expansion is being proposed. A renewed NWI would benefit from:

1. greater guidance on how frameworks applicable outside of plan areas should be developed; and
2. a requirement for jurisdictions to justify their failure to implement plans and incorporate clear trigger mechanisms.

This should be done in conjunction with clear guidance on the circumstances in which a plan should be prepared.

¹ Productivity Commission, National Water Reform 2024, Interim Report (April 2024) 4 – 5, accessible [here](#).

² Environmental Defenders Office, Submission to the Productivity Commission National Water Reform 2024 – Call for submissions (21 February 2024) accessible [here](#).

³ Northern Territory Government, ‘Water Allocation Framework’ (**Framework**) p 1.

⁴ Interim Report, p 29 (Recommendation 6.2).

⁵ Interim Report, p 29 (Recommendation 6.2).

⁶ Ibid.

We make the following further observations:

- Tropical areas of Australia have, to date, been subject to relatively limited water resource development, with many rivers in the region maintaining a natural flow-regime.⁷ A renewed NWI should ensure that ecologically and culturally significant areas are protected, both by using rigorous and enforceable statutory planning processes and through other statutory means which protect key systems and areas from water extraction.⁸
- Any frameworks or policies applicable outside a plan area should not set the consumptive pool for groundwater extraction based on modelled aquifer storage, as presently happens for large parts of the Northern Territory. The reliance on aquifer storage to set consumptive limits is inappropriate and out of step with best practice. In the Territory context, the approach to groundwater regulation, including by application of the current contingent allocation framework, has been critiqued on several occasions, most recently in analysis by Professor Matthew Currell, Professor Sue Jackson and Dr Christopher Ndehedehe.⁹
- Setting rules for sustainable levels of extraction, whether within or outside a statutory plan area, requires accurate and long-term hydrological data. As discussed further below, surface water gauging data in the Territory is very limited. There are similarly few fit for purpose monitoring bores outside residential areas of the Top End.¹⁰ There should also be an increased focus on understanding inter-aquifer connectivity and surface and groundwater connectivity to inform appropriate water management decisions.
- Ultimately, any water planning processes, including when setting and applying frameworks outside a statutory plan area, should involve:
 - a precautionary approach;
 - the application of the best available scientific knowledge;
 - determination of an environmentally sustainable level of extraction for the relevant system, so that environmental, cultural and other public benefit values are not diminished through water extraction; and
 - adequate opportunity for environmental, cultural, public benefit and consumptive uses to be identified and considered in an open and transparent way, in consultation with stakeholders.

⁷ Duvert et al, 'Hydrological processes in tropical Australia: Historical perspective and the need for a catchment observatory network to address future development' (2005) 43 *Journal of Hydrology: Regional Studies* 101194: 1 – 17, 2.

⁸ For example, the *Environment Protection Act 2019* (NT) includes mechanisms for the declaration of permanent protected environmental areas – a power which has not been used to date.

⁹ Currell et al, 'Risks in the current groundwater regulation approach in the Beetaloo region, Northern Territory, Australia' (2024) *Australasian Journal of Water Resources* 1.

¹⁰ Per review of the Bureau of Metrology Groundwater Explorer
< <http://www.bom.gov.au/water/groundwater/explorer/map.shtml>>.

NT Surface Water Take – Wet Season Flows Policy and Interference with a waterway

As noted in our February Submission,¹¹ the Surface Water Take – Wet Season Flows Policy (**WSF Policy**) is intended to provide a framework for determining the total volume of wet season flows available to licence holders within a given area in the Top End of the NT.

Generally, a licence is required to take surface water for irrigation.¹² Licences are granted by the Controller of Water Resources (**Controller**) who holds certain decision-making powers under the Water Act. It is also, generally, an offence to “interfere with a waterway” without a permit.¹³ Examples of interfering with a waterway include constructing waterway crossings (such as road or pipeline bridges), flood protection, and installation of surface water structures and structures such as dams.¹⁴ When deciding to grant a surface water licence, or a permit to interfere with a waterway, the Act requires the Controller to have regard to several factors. These include such things as the availability of water and any water allocation plan (**WAP**) applying to the area in question. Specifically, pursuant to section 90(1)(k) of the NT *Water Act* this also includes “other factors the Controller considers should be taken into account or that the Controller is required to take into account under any other law in force in the Territory”.

The total volume of water available for consumptive uses from a specific water resource, or within a given area, (referred to as the **consumptive pool**) is not explicitly determined by the Act or the Regulations. Where a WAP is in place, it is relevant to the determination of the consumptive pool. The WSF Policy changes the way in which the consumptive pool is to be determined in relation to surface water in the Top End of the NT, for areas outside of a WAP. Whilst no longer stated in the finalised WSF Policy, we assume that it will be treated as a relevant factor for the purpose of s 90(1)(k) of the NT *Water Act*.

The WSF Policy and the associated Interference with a Waterway Guideline (discussed **below**) cover the practice known as floodplain harvesting but is not confined to it – the policies relate to all forms of take of wet season flows, including pumping from rivers into storages.¹⁵

The Interim Report includes a brief discussion of the Northern Territory’s Draft Surface Water Take – Wet Season Flows Policy (**Draft WSF Policy**), which contained a hierarchy of allocation rules for surface water take during the wet season in the Top End.¹⁶ Whilst the Interim Report summarises the Draft WSF Policy and states that it was released for public consultation in 2024, we clarify that this policy was finalised on 15 February 2024.

The final WSF Policy no longer contains this hierarchy of allocation rules. Instead, it includes only the first ‘limb’ of the previously proposed hierarchy, namely that the volume of water available

¹¹ February Submission, 15.

¹² Water Act, ss 43-46.

¹³ Water Act, ss 40-42.

¹⁴ Draft Interference with a Waterway Guideline, p 6.

¹⁵ For a more extensive discussion of this issue and the value of drawing comparisons between the NT and the Murray Darling Basin, see the [EDO Briefing Note: Northern Territory Draft Surface Water Take – Wet Season Flows Policy and Draft Interference with a Waterway Guideline](#). Aspects of the present submission are taken from this Briefing Note.

¹⁶ Interim Report, p 111, and see draft WSF Policy, p 5 – 9.

from wet season water flows to consumptive uses will be “five per cent of the 25th percentile of total flows for the three highest flow months of the year based on the previous 50 years flow or modelled rainfall data of the river basis (five per cent of the 25th percentile).¹⁷

Further to the concerns raised in our February Submission,¹⁸ we also raise the following additional matters for consideration in relation to the WSF Policy.

Environmental impacts of surface water take

Rivers in the NT have been subject to relatively limited water resource development to date compared to those in the Murray Darling Basin (**MBD**).¹⁹ They are further differentiated due to the differing climates and associated differences in the natural quantity, duration and pattern of flows (together known as ‘flow regimes’).

However, despite their differences, the health of all rivers and their dependent ecosystems largely depends on the maintenance of natural flow regimes.²⁰ The ecological consequences of changing flow regimes must be understood, and appropriate management solutions implemented, *prior to* significant extraction of water. For example, in relation to the Daly River, research on behalf of the NT Government conducted almost 20 years ago determined that “flow regimes and environmental water requirements... must be understood to set appropriate environmental flows and water licence conditions for large scale agricultural development and associated vegetation clearing.”²¹ More recent research has emphasised that there remains a high degree of uncertainty regarding flow regimes in the seasonal tropics: “the lack of high-resolution and long-term hydrological data continues to limit our hydrological understanding as well as the robustness of water resources assessments and thereby water allocation policy.”²²

It is well established that in the Top End the seasonal inundation of floodplains underpins processes that contribute to river productivity and resilience.²³ The NT Government’s *Katherine Tindall Limestone Aquifer Water Allocation Plan 2019* notes that altering the size, timing and duration of floods may cause the loss of important functions that floods provide.²⁴ This is consistent with research on tropical riverscapes of Northern Australia, finding that altering the

¹⁷ Final WSF Policy, p 5.

¹⁸ February Submission, 15 – 16.

¹⁹ Clement Duvert et al., “Hydrological processes in tropical Australia: Historical perspective and the need for a catchment observatory network to address future development”, *Journal of Hydrology: Regional Studies* 43 (2022) 101194, p 2, <https://doi.org/10.1016/j.ejrh.2022.101194>.

²⁰ Mohd Sharjeel Sofi et al, “The natural flow regime: A master variable for maintaining river ecosystem health”, *EcoHydrology* 13 (8), <https://doi.org/10.1002/eco.2247>; Mark J Kennard et al, “Classification of natural flow regimes in Australia to support environmental flow management”, *Freshwater Biology* (2009), <https://doi:10.1111/j.1365-2427.2009.02307>.

²¹ Erskine WD et al, Recommended environmental water requirements for the Daly River, Northern Territory, based on ecological, hydrological and biological principles. Supervising Scientist Report 175 (National River Health Program, Environmental Flows Initiative, Technical Report 4) p v, available here: <https://www.dcceew.gov.au/sites/default/files/documents/ssr175-daly-river-env-flows.pdf>.

²² Clement Duvert et al., (n 19), p 12.

²³ Neil E Petit et al, “Productivity and Connectivity in Tropical Riverscapes of Northern Australia: Ecological Insights for Management” *Ecosystems* (2017) 20: 492–514, p 493, <https://doi.org/10.1007/s10021-016-0037-4>.

²⁴ Katherine Tindall Limestone Aquifer Water Allocation Plan 2019–2024, p 65.

natural flood regime is “likely to be detrimental and severely ‘test’ the resilience of river systems and possibly lead to a change of state”.²⁵

Therefore, while rivers in the NT differ from those in the MDB:

- all rivers and river systems are susceptible to negative impacts from excessive water extractions, including by way of floodplain harvesting; and
- it is critical that flow regimes and the ecological consequences of interfering with flow regimes are understood *before* implementing policies to permit or facilitate increased water extraction.

In light of this background, we are especially concerned about the WSF Policy being applied in place of statutory water plans.

Unclear scientific basis and shortcomings with the WSF Policy

Although the WSF Policy states that it relies on science, there is no explanation of how science has contributed to the policy, other than basic exceedance statistics that depend on availability of accurate streamflow gauging data, which is sparse across the wide area of the NT.

Overall, the policy document only considers the take from a water engineering perspective, and fails to identify what components of the flow regime this policy aims to protect and how those components contribute to ecosystem habitat and function, and river functioning. All components of a river’s flow regime, including variability in flow, are important for the ecosystem. In trying to maintain a healthy river system, it is imperative to show how these critical components will be protected. For example:²⁶

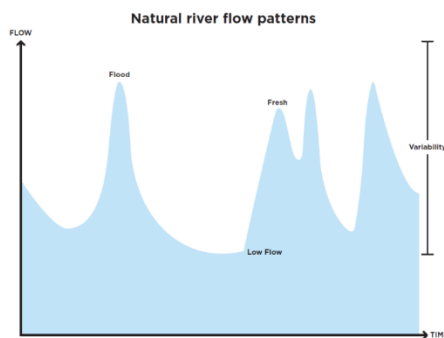


Figure 1. Key aspects of a natural river flow regimes.

- **Large floods** influence overall form of channel, maintain the channel, affect floodplain surface, vegetation cover, and help to keep river mouths open.
- **Smaller floods and flushes** mobilise sediment, remove aquatic vegetation, assist fish migration, and remove silt and excess nutrients. These may be especially important if several dry years follow one another and lead to a build-up of sediment and vegetation that choke the river.

²⁵ Neil E Petit et al, (n 33), p 506.

²⁶ Bay of Plenty Regional Council New Zealand, ‘Setting Environmental Flows in Water Management Areas’ accessible [here](#).

- **Low flows** are when the aquatic ecosystem is most stressed and when aquatic habitat is most reduced.

The policy should discuss how these components are maintained in consideration of potential water take. The policy should also consider whether First Nations water values are protected in consideration of alterations to the flow regime due to surface water take.

Section 5.1 of the WSF Policy states that water extraction will not be limited to the wet period. This raises concern for several reasons:

- The method for determining minimum flows is not specified.
- There is no discussion of how water licenses may be restricted if wet season flows are lower than expected, or how flushing high flows could be protected in the wake of multiple low flow years.
- Moreover, given the nature of rivers in the Top End, most rivers are at low flow conditions for much of the year, with groundwater contributing the baseflow conditions during the dry season. Impacts to groundwater levels as development increases, and consequent impacts to river flows are not considered.

According to the Bureau of Meteorology, there are few hydrological reference gauges on Top End rivers.²⁷ These gauges are the closest we have to “natural” streamflow conditions. There is some additional data available from the NT Government;²⁸ however, there are large parts of every river catchment that are ungauged. While it is reasonable to use catchment models to compliment the observed data, there is no information given as to how this will be achieved.

This becomes especially important because the wet season take scales with position in the catchment. Thus, an accurate estimate of seasonal and minimum flows are necessary to protect river health. Where catchment flows do not scale with catchment size (e.g. as in the Roper River, where interactions with the groundwater both increase and decrease flow along the river’s length), accurate data is needed to validate models.

Moreover, uncertainty in data and models is never acknowledged. There is significant modelling uncertainty, heterogeneity in catchment response (e.g. as described for the Roper River in the previous point), and climate variability, which should be acknowledged and accounted for.

There appears to be no consideration of future changes. As evidenced by the data presented in the recent Georgina Wiso WAP, the past 50 years (e.g. since 1970) have seen a period of increasing groundwater levels; a relatively wet period. The proposed surface water take will be allocated based on this wet period. However, scientific research indicates that this wet period is unlikely to last.²⁹ Therefore, an understanding of future changes, and implications of flow take during those changes must be indicated. Without it, this policy risks impacts to river health, as it encourages licensing of water extraction, which will be difficult to reverse.

²⁷ Bureau of Meteorology <<http://www.bom.gov.au/water/hrs/about.shtml>>

²⁸ NT Department of Environment Parks and Water Security <<https://ntg.aquaticinformatics.net/Data/Map/>>

²⁹ Higgins et al., “Unprecedented High Northern Australia Streamflow Linked to an Intensification of the Indo-Australian Monsoon”, *Water Resources Research* 58:3 (2022) <https://doi.org/10.1029/2021WR030881>

Surface water interception structures are insufficiently regulated in the Territory

Finally, we also note our ongoing concern with how interception structures, such as dams, weirs and levees, are regulated in the Northern Territory. We have noted above that it is an offence to interfere with a waterway and that the NT Controller issues permits to authorise the construction of structures which constitute such interference. The Surface Water Take policy was finalised alongside an Interference with a Waterway Guideline, intended to provide guidance on when such a permit is required.

Concerningly, the Guideline relies on proponent self-assessment to determine whether a permit application should be submitted. In addition, the publication of permit applications and granted permits is not mandated under the NT *Water Act*. There is no public oversight over how structures are being constructed which interfere with catchment flows and it is difficult to assess the individual and cumulative impacts on any given catchment.

Concerns with interception activities are acknowledged in clauses 55 and 56 of the current NWI, and manifest in the ongoing environmental issues associated with floodplain harvesting in the Murray Darling Basin.

The finalisation of the WSF Policy and the Interference with a Waterway Policy comes at a time of increasing pressure on the Territory's water sources and moves to intensify irrigated agricultural activities. The EDO is concerned, given the NT's deficient regulatory frameworks, about the possible impacts of such activities on downstream water users and the potential for significant environmental and cultural harms.