



Nature Conservation Council

The voice for nature in NSW

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DPE – Water

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Submission: Draft NSW Groundwater Strategy

The Nature Conservation Council of NSW (NCC) is the state's peak environment organisation. We represent over 170 environment groups across NSW. Together we are dedicated to protecting and conserving the wildlife, landscapes and natural resources of NSW.

We welcome the opportunity to comment on the *Draft NSW Groundwater Strategy*.

NCC supports making environmental protection the highest priority and recommends that listed actions and any subsequent strategies align with that goal.

This draft strategy sets a direction of increased reliability on groundwater sources to support the growth in industrial output and urban water supply. A more sustainable approach would be to reduce demand for water, and ensure an environmentally sustainable level of take from alluvium water sources.

Climate change is putting water sources and their ecosystems under increasing stress, so effective water management has never been more important.

Climate change predictions in this strategy point to a 15% reduction in groundwater recharge by 2060. With groundwater sources already under strain, the claim in this strategy that the demand for groundwater by towns is expected to increase by close to 300% over the next 20 years is cause for concern about the strategic priorities in this draft strategy.

Thank you for the opportunity to participate in the consultation.

Your key contact point for further questions and correspondence is [REDACTED]. We welcome further discussion with you on this matter.

Yours sincerely,

[REDACTED]

[REDACTED]

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Comments on Strategic Priorities – Draft Groundwater Strategy

Background

Groundwater is vital to a functioning ecosystem and has cultural and economic significance to First Nations Peoples.

Springs in NSW fed by the the Great Artesian Basin have watered megafauna dating back tens of thousands of years, support endemic ecosystems and continue to sustain wetlands of international importance. The spring formations at Peery Spring Complex are recognised as one of the rarest landforms in Australia and one of the largest active complexes in the Basin.

Groundwater is home to some of the most amazing lifeforms on the planet. Stygofauna are any fauna that live in groundwater systems or aquifers. Most stygofauna in Australia are crustaceans, but they also include worms, gastropods, beetles, mites and fish. Never seeing the sun, they have no circadian rhythms. They grow slowly, have few young, live long lives and stay close to home.

Some are from extremely old lineages, with ancestors dating back to Gondwana and Pangaea or the Tethys Ocean, 200 million years ago. Some display a close relationship with species from other continents which indicates that their ancestors came from a time before the break-up of the supercontinents.¹ It is because of their characteristics born of their low-energy environment, and great age, many stygofauna species are extremely rare and localised.

Stygofauna contribute important ecosystem services by creating a nutrient cycle, and have been recognised as indicators of groundwater health. Stygofauna are vulnerable to extinction from environmental changes and human impacts. They are also classified as of High Ecological Value in some areas, and are listed under the Fisheries Management Act 1994.



Different species of copepods from various parts of the world. Andrei Savitsky/Wikimedia, [CC BY-SA](#)



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RESPONSE TO STRATEGIC PRIORITY 1

Strategic priority 1: Protect groundwater resources and the ecosystems that depend on them
Identified challenge: Groundwater resources and the ecosystems that depend on them are under pressure.

NCC is pleased to see that the first priority listed in this strategy is to protect the environment, as established in the priority of use of the *Water Management Act 2000*. However, the actions set out below this priority don't adequately describe a pathway to that aim, and further on in the document, directly contradict it.

NCC considers that in order to address the identified challenge, managing aquifer drawdown and slowing and reversing environmental degradation should be the priority of this strategy. To do this, all groundwater-dependent ecosystems must be suitably mapped, and the current condition of aquifers assessed.

Recommendation

Missing actions to be prioritised:

- Mapping of groundwater dependent ecosystems is critical and should be publicly funded.
- The condition of aquifers needs to be assessed, identifying risk of subsidence and identifying contamination.

RESPONSE TO ACTIONS 1.1 TO 1.3

Action 1.1 Refresh and expand our approach to sustainable groundwater management

Action 1.2 Better integrate groundwater management with other land and water management processes.

Action 1.3. Improve management and protection of groundwater dependent ecosystems and baseflows to streams

In principle, NCC supports actions 1.1 to 1.3. However, these actions lack substantive explanation about how they would be achieved.

In many areas, the cumulative impact of mining operations has led to groundwater drawdown and contamination. The loopholes in the *NSW Aquifer Interference Policy* that exempt fracking should be removed.

Groundwater dependent ecosystems identified through updated mapping process (recommended above) should be included in water sharing plans, tying protective rules to the ecosystems.

Better understanding of how surface water and groundwater interconnect is critically important to strengthen the protection of Planned Environmental Water through water sharing plans.

"If a perennial river exists at all it typically lies within an aquifer or downstream from a series of springs. This 'baseflow', supplied by groundwater, might be all that maintains it in a drought."²



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RESPONSE TO ACTIONS 1.4 and 1.5

Action 1.4. Review and update approaches to sustainable groundwater extraction

Action 1.5 Protect groundwater quality within natural limits

In order to manage aquifer drawdown, significant changes to water sharing plan rules are required in 'at-risk' groundwater sources³.

The 32 identified at-risk groundwater sources are in areas with high irrigation use: Border Rivers, NSW Great Artesian Basin, Gwydir, Lachlan, Namoi & Peel, Macquarie, Murray & Lower Darling and Murrumbidgee.

Currently, Long Term Annual Average Extraction Limits in at-risk groundwater water sharing plans are based on history of use, not a scientifically determined environmentally sustainable level of take.

Generous carryover rules allow water account balances to exceed the volume of entitlement.

Carryover allowances can work well in regulated surface water sources, where water that has been allocated to an account and not used in the current year can be stored in a dam and called on the following year.

However, when applied in unregulated rivers, groundwater sources, and to floodplain harvesting access, account balances can grow significantly higher than the volume of the entitlement.

Status and issues papers for each catchment⁴ were developed in the preparation of water resources plans. At-risk groundwater sources were demonstrated to have been permanently drawn down through excessive levels of extraction during the Millennium Drought. For example, the Upper Lachlan Alluvium experienced a decline of over 24 metres between 2006 and 2016. The permanent decline in water height in affected groundwater sources is now being treated as a new equilibrium for extraction.

We are of the view that unless the current condition of at-risk aquifers is assessed for drawdown and contamination, actions 1.4 and 1.5 are unachievable.

Recommendation

Action 1.4 to include:

- Long Term Annual Average Extraction Limits in groundwater water sharing plans are based on science including climate change prediction.
- No carryover allowances in groundwater water sharing plans.
- A review of the Aquifer Interference Policy to ensure no mining/fracking developments are exempt from obtaining approvals.

RESPONSE TO STRATEGIC PRIORITY 2

Strategic priority 2: Build community and industry resilience through sustainable groundwater use

Identified challenge: Community and industry resilience is at risk.

Following on from identifying that groundwater resources and the ecosystems that depend on them are under pressure, and that their protection is a priority, this strategy now identifies that communities and



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industries are at risk. Rather than look to reduce the demand for water, this strategy looks for ways to increase reliance on struggling groundwater sources.

RESPONSE TO ACTIONS 2.1 AND 2.2

Action 2.1. Support towns and cities using groundwater to improve their urban water planning

Action 2.2. Support economic growth using groundwater

NCC strongly opposes actions 2.1 and 2.2.

The *2021 NSW State of the Environment Report* notes that demand for groundwater increased significantly between 2017–18 and 2019–20 from roughly 11% of the state's overall metered water use to 27%, mainly due to extended and severe drought. It also found the condition of groundwater-dependent ecosystems was unknown from a state-wide perspective.⁵

NCC supports improved urban water planning, as described in the *National Water Initiative 2004*.

As of 2020, NSW has 22 private recycled water schemes licensed under the *Water Industry Competition Act 2006*. These schemes service 6,745 drinking-water customers, 9,845 recycled-water customers, and 8,977 sewerage customers. In the year to June 2020, they supplied 4,988 million litres of recycled water.⁶ These schemes should be ramped up throughout the state.

Local council schemes to encourage water smart household and garden water use should be incentivised continually, not just in times of drought.

The *Draft Greater Sydney Water Strategy* identified the need for rainfall independent water supplies, noting that only 23% of Sydney's drinking water demand is currently met by rainfall-independent sources.

*If the 2017-2020 drought had lasted another two years, Greater Sydney would have exhausted its available water supplies, which would have had severe social and economic implications.*⁷

The direction of the state-wide groundwater strategy diverges from that of the Greater Sydney draft strategy in terms of groundwater management, which is to this strategy's detriment.

NCC considers that encouraging increased reliance on groundwater sources that are under pressure would put communities further at risk.

The draft strategy identifies water source areas where the highest financial value use of groundwater is reported, which align with areas classified as 'at-risk' from over extraction. (See 2.2. *Support economic growth using groundwater*)

Water theft is already a significant occurrence in groundwater sources used heavily for irrigation.

Compliance regulation conducted in 2021 found about one in 10 groundwater users are non-compliant. The Natural Resources Access Regulator inspected 397 water access licences with bore extraction limits in place, finding 23 of them, or about 6%, to have 'major compliance issues'.⁸



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Until illegal water take is managed adequately, encouraging further exploitation of groundwater resources would pose an unacceptable environmental risk.

Breaches of Murray-Darling Basin Plan sustainable diversion limits by more than 20% occurred in the Upper Macquarie and Lower Murrumbidgee groundwater source areas in the 2019-20 water year.

A significant number of risks (extreme and high) have been identified in the risk assessments for groundwater sources developed for the draft water resource plans. These include overallocation, declining water quality, risk of subsidence and declining water levels.

Management of overallocated groundwater sources is difficult and contributes to ecological harm that is not being adequately monitored.

We are of the view that encouraging higher levels of groundwater extraction in areas that are under allocated is inviting disaster.

Options that improve water efficiency should be encouraged. For example, alternatives to flood irrigating with groundwater in areas of high evaporation.

The bottled water industry on the North Coast is of great concern to locals, who advocate for the industry to be shut down.

The extraction is based on incomplete hydrogeology, limited information and inconclusive research. There is no evidence it's sustainable. Our concern is for groundwater dependent ecosystems that include Wollumbin/Mount Warning National Park, surrounding farmlands and our wild areas.⁹

The collapse of aquifers would be a financial catastrophe for communities, industries and farming operations of all sizes.

RESPONSE TO ACTION 2.3

Action 2.3 Support Aboriginal rights, values and uses of groundwater

We strongly support actions that improve First Nations access to water for cultural and economic purposes.

Despite the significance of water to First Nations, recent peer reviewed research demonstrates that Aboriginal people and groups in the Murray Darling Basin hold a mere 2% of available surface water entitlements while making up approximately 10% of the population. This is largely due to historical circumstances and structural inequality, which have shaped water entitlements since colonisation.¹⁰

With the caveat that no Controlled Allocation Orders (CAO)¹¹ should be issued until all groundwater dependent ecosystems are mapped and the condition of aquifers assessed, NCC supports that the requirements of First Nations communities be granted prior to any CAO actions.

All groundwater water sharing plans should include clear direction on how to identify specific values and locations of cultural sites that are intended to be protected.



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Recommendations

- Replace Action 2.1 with options that reduce town water demand on groundwater sources, such as water recycling
- Replace Action 2.2 with a strategy to reduce demand of groundwater by industry with actions that improve water efficiency

RESPONSE TO PRIORITY 3

Strategic priority 3: Improve groundwater management decisions with better information

Identified challenge: better information is needed to manage groundwater resources sustainably.

We support this strategic priority in principle, however, investment in improved management tools should not be contingent on increasing economic activity from increased groundwater extraction.

Action 3.1. Develop a groundwater knowledge plan to improve how we use groundwater information to make decisions.

This action is contingent on first establishing the location and condition of groundwater dependent ecosystems and aquifers, as recommended by NCC under strategic priority 1.

Action 3.2. Better share and integrate groundwater information

We support the development of a water register that would enable the public to freely access from a single source all details of entitlements, including: name of holder; licence number; licence conditions; water entitlement; water allocations; meter readings; real time water account balance; and all trading activities. It is also important that any convictions from non-compliant water take is available.

Groundwater data collected from state significant development projects should be required to be independently reviewed.

Action 3.3. Improve our understanding of groundwater resources

We support the development of transparent, audited models that identify Planned Environmental Water as a variable. Models should not be calibrated on maximising financial benefit of extracting more water. The non-urban water metering policy should cover all extraction, including basic landholder rights.

Public investment in improved groundwater science should be a high priority, and not linked with projects that have the strategic objective of increasing economic output.

Action 3.4. Expand our groundwater data collection

All groundwater use and interference from mining and fracking activities needs to be accounted for. Any loopholes in policies that permit developments from being included should be closed.

Impacts on river baseflows, groundwater dependent ecosystems and cultural sites from major mining operations should be independently reviewed. Assessments of the cumulative impacts of mining on NSW groundwater sources should be done.

Recommendation

- All research programs be untethered to a strategic objective to increase financial output from increased groundwater extraction



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References

¹ <https://www.smh.com.au/entertainment/the-creatures-that-time-forgot-20120616-20g5n.html>

² https://ecos.csiro.au/groundwater-true-value/?utm_source=ECOS-2019-10&utm_medium=newsletter&utm_campaign=ECOS

³ WaterNSW, September 2021. *At-risk groundwater sources*

⁴ <https://www.industry.nsw.gov.au/water/plans-programs/water-resource-plans/status>

⁵ NSW SoE Report p 90

⁶ IPART 2020 Annual Compliance Report

⁷ Draft Greater Sydney Water Strategy

⁸ <https://www.smh.com.au/environment/sustainability/one-tenth-of-groundwater-users-in-breach-of-licences-investigation-finds-20210805-p58g8e.html>

⁹ <https://tweedwateralliance.org/>

¹⁰ Lana D. Hartwig, Sue Jackson, Natalie Osborne, Trends in Aboriginal water ownership in New South Wales, Australia: The continuities between colonial and neoliberal forms of dispossession, *Land Use Policy* 99 (2020).

¹¹ Controlled Allocation Orders - The process of new aquifer licences issued from unassigned water within the extraction limit