Department of Planning and Environment

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Public submissions

Draft Namoi Regional Water Strategy:
Public consultation, August – September 2022

June 2023

Acknowledgement of Country

The Department of Planning and Environment acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and we show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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More information

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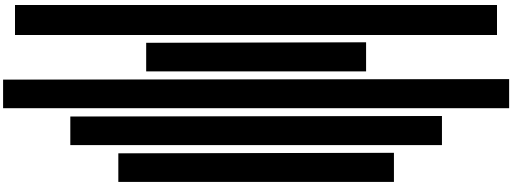

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Friday 16 September 2022

Submission
Draft #2 Namoi Regional Water Strategy

Introduction

The Inland Rivers Network ("IRN") is a coalition of environment groups and individuals that has been advocating for healthy rivers, wetlands, and groundwater in the Murray-Darling Basin since 1991.

IRN welcomes the opportunity to engage in the refinement of proposed actions for the Namoi Regional Water Strategy (RWS). We participated in the first stage of the RWS development process by providing feedback on options that are beneficial to the environment and community, options that would cause environmental harm and identified missing options.

We are concerned about the order of priorities outlined in the short-listed actions consultation paper for the RWS in that they do not meet the priorities and objects of the NSW *Water Management Act 2000*. While addressing critical human needs is priority under drought conditions, protecting environmental health of water sources is the main priority at all other times. The RWS process should reflect NSW law.

It is recognised that the overall ecosystem health of the Namoi region (including the Peel River) is poor and the region's fish community is in very poor health.[1] It is critical that the highest priority actions relate to improving ecosystem function and health.

We do not agree with the presentation of the Dungowan Dam and Pipeline Project as a commitment of the NSW Government. There is conditional commitment contingent to an agreement by the Federal Government to fund 50% of the cost. This agreement is not in place with the new Federal Government and the recent analysis of the project final business case by

[1] DPIE-Water, March 2021. Draft Namoi Regional Water Strategy p 39

Infrastructure Australia has recommended low funding priority. This project should not be in the RWS.

We are concerned that the areas of proposed future development and emphasis on regional development growth in a drying climate is concentrating water use towards the top of the Namoi catchment in the Tamworth and Narrabri areas at the expense of the lower catchment that is already under stress and critical to maintain important connectivity with the Barwon-Darling/Baaka.

IRN notes that the NSW Government is developing several strategies under the State Water Strategy. These include an Aboriginal Water Strategy, the NSW Groundwater Strategy, the Town Water Risk Reduction Program and the Water Efficiency Framework and Program. These over-arching strategies should be in place before the RWS is finalised to ensure consistency at the regional level. If necessary, an interim Aboriginal Water Strategy may be useful, to give time for full consultation with Aboriginal people while having some guidance for RWS decisions.

IRN offers the following recommendations for a final Namoi RWS and implementation plan.

High priority actions

The following actions must be given highest priority to achieve improvement in the health and resilience of water dependent ecosystems, security of water supply for critical human needs and opportunities for new regional industries.

Action 3.1 – *Assess gaps in the flow regime that are preventing achievement of environmental watering objectives and identify cooperative actions to improve ecological outcomes.*

This action proposes to investigate opportunities to:
• review relevant water sharing plan rules to improve flexibility and certainty of environmental water in changing climate conditions
• achieve more natural flow patterns and protect important flows down the system
• coordinate dam releases with unregulated tributary flows to promote higher flow events, within system constraints

This action must include:
• a review of water sharing plan rules that regulate pumping from wetland areas (lagoons and billabongs) so that critical drought refuge is better protected
• a review of the impact of groundwater extraction on environmental water flows in areas of high surface water and groundwater connectivity. This is particularly critical in times of low flow and gaps in flow regime
• a review of system constraints and opportunities for their removal
• cooperation with the Federal Department of Climate Change, Environment, Energy and Water and the Commonwealth Environmental Water Holder to recover the outstanding gap of 9.5 GL in water recovery to achieve the Sustainable Diversion Limit under the Basin Plan. (NB: The RWS consultation paper incorrectly reports the Namoi water recovery gap as 5.1 GL (p 93))

Actions 3.8, 2.5 and 2.12 - *Continue investment in groundwater science in the Namoi region, undertake research to inform reviews of groundwater extraction and condition limits and increase transparency in the management of groundwater resources in the Namoi region*

These actions need to occur concurrently so that the groundwater source and its dependent ecosystems are better protected in the Namoi region.

It is critical to invest in more extensive scientific research to address gaps in knowledge of groundwater dependent ecosystem (GDE) water requirements, groundwater quality risks and aquifer compaction risks. This is needed to enable the establishment of a current baseline condition of GDEs, and aquifer structural integrity before any further reliance on groundwater sources is considered.

There are considerable issues with the management of groundwater extraction in the Namoi, identified as having one of the highest uses of groundwater in NSW. The impact of this use on regional GDEs must be better understood.

There has been extraction over the plan limit in Upper Namoi Zones 3 & 5[2] and declining water levels in the Lower Namoi and Upper Namoi Zones 3,4, 8 and 12.[3] Any new management decisions must include the water requirements of GDEs and culturally significant sites and not focus solely on interference with other extractive users.

The protection of the structural integrity of aquifers is an intergenerational responsibility.

Action 3.5 - *Remediate unapproved floodplain structures*

It is imperative that all unapproved floodplain structures are removed from the landscape to enable improved flows to important wetlands, aquifer recharge and enhanced downstream connectivity. This must occur before floodplain harvesting works approvals and entitlements are finalised. Unapproved works should not be recognised in the development of the new Namoi Source Model.

The draft RWS released for comment in March 2021 identified eleven floodplain hotspots in the Upper Namoi and 28 in the Lower Namoi Valley.[4] However, the shortlist options identify '*20 unapproved works in the Upper Namoi Valley floodplain and six in the Lower Namoi Valley floodplain.*'[5] This discrepancy in information is of great concern. IRN urges water managers to be transparent about the accelerated compliance program for unapproved flood structures in the Namoi region along with requirement that all must be clearly identified and removed.

Actions 1.3 and 1.4 *Adopt a stronger focus on water efficiency and demand management for towns and progress advanced water treatment facilities for industries reliant on town water supplies*

[2] https://www.industry.nsw.gov.au/water/allocations-availability/managing-access-to-groundwater
[3] DPE August 2022. Namoi shortlist options – Consultation paper p 79
[4] DPIE-Water, March 2021. Draft Namoi Regional Water Strategy p 73
[5] DPE August 2022. Namoi shortlist options – Consultation paper p 96

These actions must be combined and prioritised across all urban areas in the Namoi region. All Local Councils should be supported to develop and implement an Integrated Water Cycle Management Plan as agreed to under the 2004 National Water Initiative.

For improved security of town water supply it is imperative that potable water used by industry is recycled as soon as possible. This is particularly important for Tamworth where 43% of town water is used by large meat processing works.

A key focus for demand management requires immediate funding for an education program to increase community understanding of purified wastewater treatment to increase the reliability of town water supply in a drying climate. This includes priority funding for a regional mobile water treatment plant to promote the safety of purified recycled water.

Support for other Priority Actions

IRN supports the following actions proposed in the shortlist:

1. Improving the health and resilience of water-dependent ecosystems

Actions 3.2, 3.3, 3.6: Protecting habitat and fish migration, improved monitoring. More fishways is a requirement of the Northern Basin toolkit measures.

2. Town water supply:

Actions 1.1, 1.2, 1.7: Improve drought planning and staff resources for local government

3. First Nations opportunities

Actions 2.3, 2.9, 2.10 Recognising First Nations knowledge, aspirations, and Closing the Gap

4. Better information

Actions 2.1, 2.2, 2.4: Improved modelling and information sharing. This should include investment in more river flow gauges at key points in the catchment.

5. Better management of Peel River water use

Actions 2.6 and 2.7: Review allocation rules and risks from over-allocation

6. Making existing water go further

Actions 2.11 and 2.14 (conditional): Improving industry efficiency and diversification into less water dependent industries

Conditional Support for Priority Actions

IRN gives conditional support to the following actions proposed in the shortlist:

Action 3.7 *Investigate ways to improve connectivity with the Barwon–Darling River on a multi-valley scale*

This action proposes to develop the most effective coordinated options to improve connectivity across all Barwon-Darling/Baaka tributaries through the Western RWS. However, the high level of connectivity of the Namoi River to the Barwon-Darling/Baaka

must be recognised within the Namoi RWS with appropriate end-of-system target flows to manage in-valley access to floodplain harvesting and tributary inflows.

IRN supports the need to improve connectivity to Menindee Lakes and the Lower Darling/Baaka. The proposed trigger of 195 GL in Menindee Lakes is too low and will not protect critical human or ecological needs in the lower catchment. We do not support the approach taken in the Western RWS and believe it will lock in ongoing ecological collapse. To ensure improvement in Barwon-Darling/Baaka ecosystem health the trigger for upstream access to flood water and tributary inflow must be at least 450 GL in Menindee Lakes.

Rule changes to the Namoi WSPs to include floodplain harvesting regulation must improve connectivity of flows to the Barwon-Darling/Baaka. Because the Namoi contributes almost 25% of flows to Menindee Lakes, it is critical to have a larger end-of-system flow target than proposed.

This is in keeping with the RWS aim to '*do more to support the resilience of the region's ecosystems, improve overall waterway health and work out how we can best protect water-dependent species, communities and habitat.*'[6]

See Appendix 1 for connectivity and in valley flow targets for improved ecological outcomes.

Action 1.5: *Reduce uncertainty in groundwater security for regional towns*

This action includes providing support to local water utilities to undertake local level investigations to understand and improve the security of groundwater supplies using the latest data. This action must not include increasing the dependency of towns on groundwater during drought. Actions 1.3 and 1.4 should take priority to improve water demand and efficiency.

The action must include findings from Actions 3.8, 2.5 and 2.12 and be integrated with these actions. The finalisation of the NSW Groundwater Strategy is critical to improve knowledge and management of groundwater sources.

Action 1.6 *Plan for the next long term water supply augmentation as Tamworth grows*

Because the Dungowan Dam is not a certainty, several of the proposed actions need to be prioritised as short-term requirements. These include additional water treatment facilities and an increase in the water reserved for Tamworth in Chaffey Dam.

IRN does not support proposals to pipe water from the Upper Namoi or Manning Valley. This is taking water from other users including the environment.

Action 2.13: *Investigate managed aquifer recharge*

This action aims to develop a regulatory framework for Managed Aquifer Recharge and provide guidance on the feasibility of locations in the Namoi region. The assessment of

[6] DPE August 2022. Namoi shortlist options – Executive Summary p 9

environmental impact must be a key focus of the framework. Also, the issue of costs/benefits analysis and who will pay should be a key consideration for this option.

Action 2.14 *Ensure the water management framework can support sustainable economic diversification and transitioning economies*

This action aims to work across government to understand the water supply and demand needs of emerging industries and begin planning for the long-term diversification away from coal dependant economies.

IRN does not support the development of the gas industry in the Namoi as a form of diversification. A move away from all fossil fuel industry is imperative to prevent worse climate change impacts on the region's water sources than those already predicted. The Narrabri Gas project will impact on recharge of the Great Artesian Basin and cause drawdown of existing productive agriculture groundwater sources. It is not an Ecologically Sustainable Development and should not be included in the RWS as an example of sustainable economic diversification.

However, IRN fully supports diversification into less water dependent industries. Research into the development of new industries using by products from wastewater during the purified recycling process eg extracted nutrients such as phosphorous, medications and other useful by products. These new industries are being developed in Europe providing useful case studies to draw on.

Actions not supported

IRN does not support the following actions proposed in the shortlist:

Action 2.8 *Make provision for voluntary licence conversions*

This action proposes the conversion of 5% of General Security (GS) entitlements in the Namoi Valley to High Security. This will have an impact on the environment through loss of reliability of remaining GS entitlements, including held environmental water. It will also cause a decrease in end-of-system flows that are critical for connectivity to the Barwon-Darling/Baaka and for Walgett critical water needs.

This action is also likely to increase the volume of Tributary Utilisation Rates and reduce the variability of natural inflows into the Upper and Lower Namoi regulated water source. This is a threat to current supplementary entitlement rules that provide the main planned environmental water in the water source.

Action 3.4 - *Fully implement the NSW Floodplain Harvesting Program* (the FPH policy).

IRN does not support the FPH policy as it currently stands nor how it is being implemented. It is estimated that more than a quarter of all surface water used in the Namoi region comes from water diverted from the floodplain and intercepted before it enters rivers and creeks.

We note that a new Source Model for the Namoi regulated river is being developed to account for water take from the floodplain. There is serious concern about the methodology used under the FPH policy to assess entitlement in the unregulated water sources and for properties with only groundwater licences.

IRN strongly objects to this action being considered as a benefit to the environment. Any reduction in the historic take from the floodplain is not a "gift to the environment"; rather it is addressing 30 years of unfettered, unregulated water use that has been stolen from the environment with no recourse taken.

The significance of this level of diversion has not been assessed for its cumulative instream and downstream environmental, cultural, and social impacts. The claim that by implementing the policy in the Namoi valley significant environmental outcomes will be achieved fails to recognise the significant long-term environmental damage that has occurred over time through the removal of 25% of all surface flows in the region.

The policy and its implementation have focussed on assessing on-farm infrastructure and modelling diversions with the purpose of calculating entitlements and licencing works. The criterion for floodplain works assessment and licencing does not include identification of works that may need to be removed because of their significant impact on essential flood flows to important ecological assets and cultural values.

The regulation of floodplain harvesting must be preceded by an assessment of the cumulative environmental, cultural, and social impact of decades of floodplain harvesting and must include cease-to-divert flow targets that are scientifically based on environmental sustainability. These are outlined in Appendix 1.

The removal or modification of 'hotspot' and unapproved floodplain works must occur before works licences for floodplain harvesting are granted. It is recognised that the main replenishment of off-channel drought refugia occurs from larger connecting and overbank flows. [7] Floodplain harvesting can prevent this very important ecological function. The identification of key floodplain drought refugia is imperative before the licencing of floodplain harvesting diversion and works.

It is also critical that connectivity flows to lagoons, billabongs and wetland areas in the Namoi are improved to support native fish breeding to help rebuild threatened species populations.

Groundwater recharge is an important function of flood flows. This is critical in the Namoi with current high dependence on groundwater use.

Achieving all environmental water requirements of the Namoi and Barwon-Darling/Baaka should have priority over floodplain harvesting.

The policy has key faults that must be rectified before implementation:

- locks in an environmentally unsustainable level of water diversion from floodplains and downstream
- allows for 5 years of entitlement to be captured at once
- excludes rainfall runoff from licences
- works should not be licenced until action 3.6 (removal of unapproved floodplain works) is completed

[7] DPE June 2022. Border Rivers shortlist options – Consultation paper p 84

Response to Questions

1. What kind of information and information products do you need to make decisions for your business or water use?

It is not only businesses that need information to understand the impacts of climate change, policy, and current operational decisions on water management.

The volume of tributary inflows assigned to Tributary Utilisation Rates is a key piece of information that is still not forthcoming, even though there was a commitment to provide this information to the Connectivity Stakeholder Reference Group.

More river gauges with telemetry to provide real time flow information will improve decision-making for environmental water holders and community.

2. How can place-based solutions be implemented in a way that creates opportunities for Aboriginal people and communities in the Namoi region, while also delivering positive outcomes for the broader community?

The implementation of the NSW *Water Management Act 2000* and the Basin Plan to provide water entitlements to Aboriginal people is essential, particularly for cultural flows to protect and enhance cultural values in wetlands and floodplain country. The positive outcomes should be for First Nations groups in recognition of their loss of connection to country. The broader community has benefited from all water use to date. It is time to recognise and respect First Nations knowledge and needs in line with Closing the Gap.

3. What should be the focus of future research and investment in water-use efficiency?

There must be encouragement for industry investment in more efficient irrigation technology to move away from flood irrigation practices. Attention should be given to subsurface irrigation technology and evaporation control options for on farm storages such as floating solar farms. This fits in with the diversification of the economy and meeting renewable energy targets.

A focus should also occur throughout the region on businesses relying on unregulated water sources and using dryland or grazing techniques to do better with less rainfall. Their efforts should be designed to also have downstream benefits.

Attention needs to be given to regenerative agricultural techniques that improve soil carbon and water infiltration, researching how this influences stream flow in relation to storm runoff, sustaining base flows and water quality.

4. What do you see as the key challenges that need to be addressed to improve the management of the region's rivers?

A lot of the identification and prioritisation work has been done in previous Catchment Management Plans – this work is being undertaken by LLS and Landcare. These planning documents need to be acknowledged and better resourced for implementation.

Stronger land-clearing regulation, removal of structures and constraints, implementation of floodplain management plans, better rules in Water Sharing Plans to protect environmental water and improved demand management for extraction need to be addressed to improve management of rivers including all their dependent ecosystems.

5. What are the relative benefits and impacts of options to improve connectivity with the Barwon–Darling River system?

It is critical that the high level of connectivity between the Namoi and Barwon-Darling/Baaka is recognised and enhanced. Improvements in water use efficiency for towns and industry in the Namoi should allow for more water to flow downstream for critical ecological repair and critical human needs. This is especially important under climate change predictions. Reduction in demand for water in the Namoi will reduce any perceived impacts of protecting more water to connect downstream.

The benefits of improving connectivity from all northern tributaries to sustain the Barwon-Darling/Baaka and connectivity between the Northern and Southern Basin are well-known and must be recognised in the RWS.

The Commonwealth Water Act and the Murray-Darling Basin Plan were developed with bipartisan support to allow the complex Basin to be managed as a connected whole. Water Resource Plans (WRPs) connect the rules for each catchment (be they regulated, unregulated or alluvium) under the one plan. The WRPs then connect to each other over state boundaries. The deadline for having Water Resource Plans (WRPs) accredited was 30 June 2019, and to date no NSW WRPs have been accredited. As the Inspector General of Water Compliance stated:

> *"It is up to the NSW state government to ensure WRPs, are submitted soon, otherwise they are failing the environment, individual water users and the broader community across not only NSW, but the entire Basin."*

NSW should submit WRPs that meet the requirements of the Murray Darling Basin Plan as a matter of urgency.

Finalising the Sustainable Diversion Limit water recovery for the Namoi by co-operating with Federal agencies to meet the 9.5 GL gap will assist in the improvement of connectivity Barwon-Darling/Baaka.

Improved flow targets to be included in an amended Namoi Regulated Water Sharing Plan are provided in Appendix 1.

Conclusion

IRN supports the move away from some infrastructure projects that will increase environmental harm. This must also include the proposed Dungowan Dam that does not meet the objective of the RWS for affordability or cost benefit ration of >1.

We fully support the focus on improved water use efficiency and sustainable economic diversification away from water intensive industries. The implementation of water recycling for industry and purified water recycling to better secure town water supply in the region must be given highest priority.

Climate change will seriously impact on current water policy and management arrangements. The environmental and cultural values of the Namoi region have been significantly impacted by poor water management practices in the past. These need to be ameliorated before the worse impacts of climate change occur.

For more information about this submission please contact IRN at:

[redacted]

Yours sincerely

[redacted]

[redacted]

Appendix 1

IRN recommends the following flow targets to improve in valley ecosystem health and connectivity with the Barwon-Darling/Baaka. These must be achieved unless the Minister is confident that there are sufficient forecast gauge flows to achieve each flow rate and duration:

• flows at Namoi at Gunnedah in the last 485 days has exceeded 5,400 ML/day for 5 consecutive days; or

• flows at Namoi at Gunnedah in the last 1,000 days has exceeded 32,700 ML/day for 3 consecutive days; or

• flows at Namoi at Gunnedah in the last 910 days has exceeded 40,000 ML/day for 2 consecutive days; or

• flows at Namoi River upstream of Walgett in the last 485 days has exceeded 2,250 ML/day for 5 consecutive days; or

• flows at Namoi River upstream of Walgett in the last 910 days has exceeded 8,500 ML/day for 5 consecutive days; or

• flows at Namoi River upstream of Walgett in the last 1,200 days has exceeded 10,600 ML/day for 10 consecutive days; or

• flows at Barwon River at Brewarrina in the last 365 days has exceeded 1,000 ML/day for 10 consecutive days; or

• flows at Barwon River at Brewarrina in the last 485 days has exceeded 9,000 ML/day for 15 consecutive days; or

• flows at Darling River at Wilcannia in the last 365 days has exceeded 1,400 ML/day for 10 consecutive days; or

• flows at Darling River at Wilcannia in the last 485 days has exceeded 14,000 ML/day for 15 consecutive days; or

• flows at Darling River at Wilcannia in the last 1,200 days has exceeded 30,000 ML/day for 15 consecutive days; or

• there is less than 450 GL stored in the Menindee Lakes System

Scientific Concerns about Agriculture on the Liverpool Plains (SCALP)
Group Contact:
[redacted]

September 18, 2022

Draft Namoi Regional Water Strategy

The group Scientific Concerns about Agriculture on the Liverpool Plains (SCALP) make the following comment in relation to the Draft Namoi Regional Strategy.

With respect to the Namoi Valley:

1. Groundwater is of vital importance to the whole Namoi Valley.
    a. Bore data of monitoring bores on the Liverpool Plains show a steady decline in aquifer levels since about 1980 indicating recharge is not keeping up with extraction. Sustainable diversion limits set out in Water Management Plans and the Murray Darling Basin Plan appear to need revision. (See *"Groundwater Resources in the vicinity of Shenhua Mine Application"* prepared by Emeritus Professor Ian Acworth, March 25, 2020.)
    b. Priority Action 2.5: *"Increase our knowledge of groundwater resources to inform future decisions on sustainable groundwater extraction and condition limits."* and;
    Priority Action 3.8: *"address gaps in our knowledge of groundwater dependent ecosystem water requirements, groundwater quality risks and aquifer compaction risks."*
    These should be raised to the top of the priority list.

    If groundwater in the Namoi Valley fails agriculture, towns and villages will not grow but will fail.
2. Improved and constant monitoring of groundwater dependent ecosystems will give a clear indication of groundwater and aquifer health. Groundwater is an essential element of the ecology of the Namoi Valley by supporting surface vegetation during dry periods. If groundwater drops below the root zone the vegetation dies.
3. There is a need to assess gaps in the flow regime that are preventing achievement of environmental watering objectives and identify cooperation to improve ecological outcomes (Priority Action 3.1) to will ensure that healthy riverine ecosystems are able to support people, agriculture, industry environmental assets.
4. Without healthy ecosystems everything fails.
5. Develop a thorough understanding the impact of floodplain structures and harvesting of overland flows with relation to not only the Namoi Valley but the Murray Darling System and compatibility with the Environmentally Sustainable Level of Take identified by the CSIRO *"Science Review"* November 2011, p12.
6. Identify and establish a permanent source of funding to ensure that the Namoi Regional Strategy objectives are fully implemented.

With respect to Tamworth City:

1. Recycling all used water to potable standard should be the first priority which should to be stored in either Chaffey Dam or Dungowan Dam, used for aquifer recharge or a storage similar to the current emergency storage at Calala Treatment Plant.
    Use the existing Chaffey Dam pipeline to recharge the Dam using a solar powered pumping system.
    Recharge aquifers if the Dam storage is at full surface level or enhance flows below Tamworth.
2. Recycling to potable standard is the most effective way of achieving an "enduring level of supply" for Tamworth delivering to a level of demand that can be confidently supplied irrespective of the intensity and duration of drought.

3. Recycling all used water to potable standard avoids the additional capital expenditure involved in two sets of infrastructure (i.e., infrastructure for domestic supply and industrial use).
4. Improve the efficiency of water supply for domestic, commercial, and industrial use:
    - Review environmental flow from Chaffey and Dungowan Dams to the confluence with the Namoi River.
    - Investigate the environmental flows from Chaffey Dam during the 2017-2020 period and ensure that all future environmental flows are accounted for in a transparent manner.
    - Investigate the water usage from Chaffey Dam releases in the period 2017 to 2019 to determine the causes of the dam level falling from nearly 100% in 2017 to 12% in 2019 including impact or "carry-over water" and the possibility of leakage through a fault line under the dam.
    - Reserve Dungowan for Tamworth City domestic supply while recognising the historical rights of water users above the confluence of Dungowan Creek and the Peel River.
    - Recover unused water entitlements in the Peel River to enhance Tamworth Regional Council entitlements.
    - Develop a thorough understanding of the relationship between inflows during rain events from Duncans Creek, Cockburn River, Tangaratta Creek and Timbumburi Creek with relation to environmental flows from Chaffey Dam.
    - Evaluate and analyse the impact on the draw-down of Tamworth Regional Council's entitlement and availability of the volume of water available for consumptive use and the options for water delivery from Chaffey to Tamworth City. The options are:
        - Continue the current pipeline protocol of use when Chaffey drops to 20%.
        - Full time operation of the pipeline with environmental flows to maintain river health and the volumes of water required for both.
        - Use of the pipeline to deliver recycled water to Chaffey Dam and continue delivery of water to Tamworth City down the Peel River.
5. Enhance the potential volume of water available to Tamworth City through a review of the water licences in the Peel Alluvium and the connectivity between the Peel River and the Peel Alluvium.
6. Develop community understanding and acceptance of the need, safety and advantages of recycling used water to potable standard.
7. Tamworth City water supply is critically dependent on the Peel Catchment and the aquifers on the high ridges of the Great Dividing Range that feed the Peel, Barnard, and Hunter Rivers. A thorough hydrological study is required to ensure that developments, particularly industrial developments do not damage those aquifers and hydrologic of the Upper Peel River. (Note the work of [redacted] on the Liverpool Plains and [redacted] analysis of the Hills of Gold Wind Farm.)
8. To be consistent with the "enduring level of supply" approach review the requirements of the Water Act, 2007, to ensure that the trigger for critical human needs is set at a level which guarantees a reliable supply of water for domestic use in period low rainfall.

Yours faithfully

[redacted]

Tamworth REGIONAL COUNCIL

All correspondence should be addressed to the [redacted]

[redacted]

[redacted]

Department of Planning and Environment
Locked Bag 5022
PARRAMATTA NSW 2124

Dear Sir/Madam

Draft Namoi Regional Water Strategy August 2022 Consultation Paper

Ref: zw/BL

On behalf of Tamworth Regional Council thank you for the opportunity to provide comments on the Draft Namoi Regional Water Strategy August 2022 Consultation Paper.

Council's submission follows.

Please contact the undersigned should you wish to discuss this matter further.

Yours faithfully,

[redacted]

[redacted]

[redacted]

14 September 2022

Tamworth Regional Council

Response to the NSW Department of Planning and Environment

Draft Namoi Regional Water Strategy August 2022 Consultation Paper

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Background

Tamworth Regional Council supplies potable water to 7 different communities within the Council area via 6 discrete water supply systems. These communities are

- Tamworth
- Moonbi/Kootingal
- Attunga
- Bendemeer
- Barraba
- Manilla
- Nundle

The table below details the water sources and entitlements available to Council from each of those sources for each centre.

Water Entitlements - Various Sources - ML's				
	Regulated River	**Unregulated River**	**Groundwater - Alluvial**	**Groundwater - Fractured Rock**
Tamworth, Moonbi, Kootingal	16400	5600	118	
Attunga			120	
Bendemeer		84		10
Barraba	365			180
Manilla	150	421		
Nundle			100	

Ove the past 20 years each of the communities have experienced drought leading to the imposition of severe water restrictions as shown below

Centre	Restrictions	Period
Tamworth	Level 5 – No outside use of water. Target consumption of 150 L/person per day	14/5/2007 to 24/8/2007 23/9/2019 to 31/8/2020
Barraba	Level 4 – No outside watering	20/1/20 to 6/4/2020
Manilla	Level 4 - No outside watering	20/1/20 to 6/4/2020
Nundle	Level 4 - No outside watering	4/2/03 to 4/3/03 28/1/19 to 13/4/20

Given the severity of restrictions and particularly how long Level 5 restrictions where in place in Tamworth during the most recent drought which saw Chaffey Dam, Council's main supply dam for Tamworth, Moonbi and Kootingal, reach a storage level of 12.85% (13,107 ML's), Council is very concerned about enhancing the future water security and reliability of raw water at all our centres, and particularly Tamworth.

Comments of the draft Strategy Consultation Paper

Council considered a report on this matter at its meeting of 13 September 2022 and resolved to make a submission including the following comments in relation to the consultation paper;

- Council commends the NSW Government for the imitative shown in preparing the Namoi Regional Water Strategy and to the Department for the work undertaken to date. Council recognises the management of water resources is complex and the development of valley based strategies is an important part of the process.
- Council is pleased the Consultation Paper highlights the critical importance of addressing Tamworth's long-term water security risks. The paper also provides clear actions for the NSW Government and TRC to work together on.
- A key shortcoming of the Consultation Paper is not highlighting the importance of preparing a water security plan for Tamworth in the short-term. The strategy, at least as far as Tamworth's water security is concerned, relies on the New Dungowan Dam resolving any water security concerns in the short-term and suggests a water security plan is a longer-term planning action (as Tamworth grows). Regardless of whether or not the new dam proceeds, a water security plan is needed for Tamworth now. This plan needs to identify a portfolio of demand and supply options to address both short-term and long-term water security, and;
- There is a need for the Namoi Regional Water Strategy (RWS) to be updated if the New Dungowan Dam does not proceed. The current Namoi RWS is predicated on the proposed New Dungowan Dam proceeding. While many of the actions listed in the Consultation Paper (under Priority 1) may still be relevant, the immediate need for a Tamworth Water Security Plan will be even more critical, along with support from the state and federal governments to implement the Plan. The short list of infrastructure and non-infrastructure options that should be considered in the Plan would also need to be reassessed.

Department of Planning and Environment

Regional Water Strategies
Public Exhibition 2

Submission Questionnaire

Namoi Regional Water Strategy
Challenges and shortlisted actions

The NSW Government is taking action to improve long-term water security for Namoi. The Namoi Regional Water Strategy sets out a shortlist of proposed actions to help deliver healthy and resilient water resources for a liveable and prosperous region.

Your voice is important

This is your opportunity to let us know which actions you support and think should be implemented to help set the region up for the future.

This questionnaire will take approximately 15 minutes to complete, and your response can remain anonymous if you wish (see question 7).

Questions marked with an asterisk (*) require an answer.

If you have any questions about the questionnaire, please email: regionalwater.strategies@dpie.nsw.gov.au

You can also provide feedback via our submission platform.

1. Your details

* Email address: [redacted]

* Name: [redacted]

* Address: [redacted]

* Contact phone number: [redacted]

*** Do you identify as an Aboriginal person?** (select one)

○ Yes ○ No ○ Choose not to answer

*** Are you making this submission as an individual or as a representative of an organisation?** (select one)

○ Individual ◉ Organisation

2. Organisation or business details

If making this submission as a representative of an organisation, who do you represent? (select one)

Government (select one)

○ Commonwealth ○ New South Wales ○ State other ○ Local

○ Local Water Utility

Peak representative organisation (select one)

○ Environment ○ Industry ○ Business group or business chamber ○ Community

Aboriginal organisation (select one)

○ Yes ○ No

○ **Other** (select and provide details) _____

○ **N/A**

3. Regional water challenges

We have identified **five water challenges** that are an immediate priority. More detail about each regional challenge is available in the Consultation Paper.

1 Addressing Tamworth's long term water security risks

Tamworth is expected to grow significantly in population, housing and employment over the next 20 years. Even without growth, there is a real and urgent risk that Tamworth could run out of water in a severe and prolonged drought. This risk becomes more acute as the population grows or if climate change impacts involve drier conditions.

2 Addressing water security risks of regional towns across the Namoi Valley

Many towns are dependent on groundwater for their water supply. During extended dry periods, many water users increase their use of groundwater compared to average years, and the amount of water recharging aquifers from rivers and rainfall is diminished. Combined, these conditions can result in severe localised water level drawdowns and create difficulties in accessing water for town water use until the drought breaks and the groundwater levels recover.

3 Supporting a growing regional economy in a future of potentially reduced water availability

Agriculture and mining are essential industries for the Namoi region and the economy is expected to grow and diversify, driven by investment into the Namoi regional jobs precinct, Narrabri gas project, Narrabri Special Activation Precinct, New England Renewable Energy Zone and the Inland Rail project. Due to the high reliance of the region's economy on water, many industries are vulnerable to shocks from droughts. As water availability decreases, so do production and employment.

4 Improving the health and resilience of aquatic ecosystems

River regulation, extraction and water infrastructure operations have changed flow variability, water quantity and water quality. This has impacted the health of water-dependent ecosystems and assets in both the region and connected valleys, affecting the resilience of water-dependent ecosystems.

5 Dismantling barriers to Aboriginal water rights

'We can't sing our song no more, we can't live on the river no more to look after her, for you all' (Gomeroi)

Yaama Nginda Gomeroi Wunnungulda. We are Gomeroi, we have our way of doing business. You have to be invited to sit around our fire. We share language and we engage together. You are asked to identify who you are and what you represent and be clear in your intent. Then, and only then, can we do business together.

Do you agree that these are the priority water challenges for the Namoi region that we need to focus on? (select one)

● Yes ○ No

If no, please outline what you see as the priority water challenges in this region over the next 20 – 40 years?

4. Addressing the challenges

We have developed three regional priorities with actions under each. We want to know which of the actions you support.

The regional priorities are:

1 Support the long-term water needs of Tamworth and other towns in the region

2 Support a growing regional community under a more variable and uncertain future climate

3 Improve the health and resilience of water dependent ecosystems.

Priority 1: Support the long-term water needs of Tamworth and other towns in the region

The actions shortlisted under this priority will:

- reduce the risk of severe restrictions and costly emergency water supply measures
- focus on a mix of demand management, efficiency, information and infrastructure initiatives
- help towns in the region to make the best use of the available water resources, and better respond to the needs of population growth and the risks associated with climate change.

Proposed action		Do you support this action?
1.1	Confirming the level of water security needed to support Tamworth	○ Yes ○ No
1.2	Drought management planning for towns	○ Yes ○ No
1.3	Stronger focus on water efficiency and demand management for towns	◉ Yes ○ No
1.4	Advanced water treatment facility for industries reliant on town water supplies	● Yes ○ No
1.5	Reduce uncertainty in groundwater security for regional towns	○ Yes ○ No
1.6	Plan for the next long-term water supply augmentation as Tamworth grows	○ Yes ○ No
1.7	Addressing water related skills shortages in small councils	● Yes ○ No

A) Do you have any comments on the proposed actions identified?

The Commonwealth Environmental Water Office (CEWO) is supportive of examining a range of options that improve water security for towns and industries, which can be particularly challenging during dry times. However, the environmental (including any impacts to matters of national environmental significance), economic, and social/cultural impacts and benefits of the various actions need to be assessed as part of these investigations. The potential impacts on surface and groundwater systems, planned environmental water, implications for the Sustainable Diversion Limit and the Basin Plan and relevant water sharing plans would need to be considered carefully. Facilitated impacts and actions, those which are made possible by the proposed action, would also need to be carefully considered when assessing the actions.

As noted in the previous submission[1], the CEWO recognises the primacy of securing water supplies for critical human water needs. We also acknowledge the challenges in achieving a balance in the sharing and use of water under these circumstances that meets the objectives of the *NSW Water Management Act 2000*. However, priority should be given to maximising the benefits of existing infrastructure options together with options that reduce demand, are cheaper and have less impact on the environment and water users. The document highlights the potential impacts of climate change which suggest rainfall and inflows are expected to be lower and may reduce the effectiveness of additional storage and may also increase pressure on groundwater supplies. Actions focused on water security planning for large towns (action 1.1) need to ensure all aspects of water needs are included including environmental, social and cultural. Many of the options are focused on securing water for Tamworth. Security planning also needs to consider the impacts on downstream towns, users and the environment.

Priority 1 includes the new Dungowan Dam and pipeline as a government commitment. The issues raised previously by the CEWO in the submission on the long list of options still stand. This would increase the regulation of water and may exacerbate the environmental impacts in the Peel River system. The value and reliability of significant infrastructure needs to be assessed in relation to other proposed actions, particularly with the added limitations of climate change.

Proposed actions such as restrictions, water conservation, reuse and recycling may increase water supply, reduce demand, result in water savings and/or reduced reliance on supply from water storage, rivers and groundwater systems in some areas (e.g. actions 1.3 and 1.4) and are an important part of improving water security. Assessment of impacts on the quantity or quality of surface and groundwater systems may be required (see also links to other options such as 2.13 managed aquifer recharge). Some reuse and recycling actions may also improve the quality of run-off to the local rivers and streams.

Many towns and communities in the Namoi are reliant on groundwater. The draft strategy notes the impacts of extraction and drought on the groundwater levels in areas of the Namoi, particularly during dry years. Any proposed actions that result in an increased reliance on or use of groundwater require careful evaluation to ensure the ongoing sustainability of the resource is not compromised and surface and groundwater dependent ecosystems are protected. Action 1.5 included exploring the option of granting temporary licences to access groundwater during drought which may increase the reliance on groundwater systems during dry times and may exacerbate the impacts on groundwater dependent ecosystems, surface water systems, and other water users. Improved understanding of groundwater processes and sustainable access to groundwater is essential to implementing the existing water sharing plan and actions in the strategy that increase reliance on groundwater resources. Further consideration of proposed groundwater actions should be informed by the additional work proposed in actions such as 2.2, 2.4, 2.5, 2.6 and 2.12, 2.13, 3.8.

Action 1.6 includes a short-list of options to help support Tamworth's long-term water security, which includes a pipeline from Namoi Valley dams to Tamworth with an increased storage reserve, and a pipeline from Manning Valley to the Peel Valley. Piping water can improve delivery efficiency, substantially reducing the volume of water required for transmission from the source to the demand point. However, the economic and environmental costs and benefits of regional and inter-regional pipelines need careful evaluation. The impact on surface and groundwater systems, their associated biota, and ecological processes in both the originating and receiving water sources would require a thorough assessment. Implications for the Basin Plan, including the Sustainable Diversion Limit, planned environmental water and other licence holders also need to be clearly identified and assessed. Many of

[1] https://www.dcceew.gov.au/sites/default/files/documents/cewo-submission-namoi-regional-water-strategy.pdf

these issues were raised in the previous submission on the long list of options.

The document also notes that actions such as a pipeline from the Namoi Valley and the action to increase water reserved for Tamworth in Chaffey Dam are likely to have impacts on General Security water users, specifically 'agricultural' users. These actions will also have a negative impact on Commonwealth General Security entitlements, and further limit the capacity of the CEWO to meet environmental demands in the Namoi Valley (Peel and Namoi rivers). The impacts on the environment, planned environmental water, sustainable diversion limit and Basin Plan would need to be clearly identified. The cost-effectiveness of these options particularly under climate change risks of less reliable rainfall and inflows and periods of low or no allocations need to be carefully evaluated.

Priority 2: Support a growing regional community under a more variable and uncertain future climate

The actions shortlisted under this priority will:

- improve the evidence and information base to support decision making, risk management and innovation
- explore opportunities to make sure the water entitlement and access framework can cater to the development of emerging industries, facilitating access to higher security water while observing legislated limits to take
- support Aboriginal people to be more involved in water management, by sharing their traditional knowledge and contributing to decision making.

Proposed action		Do you support this action?
2.1	Invest in continuous improvement to surface water system modelling in the Namoi region	○ Yes ○ No
2.2	Accelerate investment in groundwater modelling in the Namoi region	○ Yes ○ No
2.3	Improve the participation of Aboriginal people in water management in the Namoi region	○ Yes ○ No
2.4	Improve public access to climate information and water availability forecasts	○ Yes ○ No
2.5	Undertake research to inform reviews of groundwater extraction limits	○ Yes ○ No
2.6	Review the water allocation rules for licences in the Peel alluvium	○ Yes ○ No
2.7	Address risks associated with potential future activation of underused licences in the Peel Valley	○ Yes ○ No
2.8	Make provision for voluntary licence conversions	○ Yes ○ No
2.9	Support the development of new Aboriginal business opportunities in the Namoi region	⊙ Yes ○ No
2.10	Improve outcomes for Aboriginal people through place-based initiatives	Yes No
2.11	Support increased investment and research into industry climate adaptation	Yes No
2.12	Increase transparency in the management of groundwater resources in the Namoi region	Yes No
2.13	Investigate managed aquifer recharge in the Namoi region	Yes No

2.14	Ensure water can support sustainable economic diversification and transitioning economies	○ Yes ○ No

A) Do you have any comments on the proposed actions identified?

The CEWO would support actions that help build knowledge and understanding about surface and groundwater systems in the Namoi region (actions 2.1, 2.2, 2.4, 2.5, 2.6 and 3.8). This new knowledge is even more important in the context of climate change. Understanding sustainable access to groundwater is essential to implementing existing water sharing plans and to inform future actions that have the potential to increase reliance on groundwater resources. Increasing the transparency and certainty around surface and groundwater management would also be beneficial (actions 2.4, 2.6 and 2.12). Improving the availability of climate and water information to the public would improve public confidence in water planning and management (action 2.4).

As per our previous submission, the CEWO acknowledges the Traditional Owners of the Namoi Valley and the deep cultural, social, environmental, spiritual and economic connections they hold to their lands and waters. The CEWO strongly supports any effort to increase the participation of local Aboriginal people in water management, including the creation of licences specifically designed for cultural and economic water delivery which would enable Aboriginal communities to directly manage water to support their local values and sites on an enduring basis (actions 2.3 and 2.10). Improving understanding of cultural values and traditional ecological knowledge would improve the ability of environmental water managers and river operators to support cultural needs through a range of water deliveries, made in conjunction and supporting cultural flows resulting from dedicated licences. The CEWO also supports efforts to improve business opportunities and broad sustainable economic diversification (action 2.9).

The CEWO is committed to working meaningfully with First Nations peoples. Our aim is to include First Nations peoples' values and knowledge in the planning and management of water for the environment. We will continue to build relationships with First Nations' organisations and communities, to learn from and identify ways to support cultural values alongside environmental outcomes.

The strategy includes a proposed action to assess the risk of activation of underused licences (action 2.7). The implications for water sharing, water allocation, reliability for the suite of entitlement holders including environmental and planned environmental water would need to be considered as part of the investigation.

As per the previous CEWO submission, actions such as investigation of licence conversions (action 2.8) would need to ensure adequate consultation on the option and conversion factor, assess impacts on the suite of entitlements and implications for storage management, conveyance and allocation and implications for the Basin Plan, sustainable diversion limit and planned environmental water. Please refer to the CEWO's submission on the long list of options for further information. Without further detail on the proposal, the CEWO is not in a position to support the option at this stage.

Proposed actions such as managed aquifer recharge (action 2.13) may support more sustainable access to water in some locations. However, further investigation of managed aquifer recharge options would need to assess the potential environmental impacts on both aquifers and surface water systems and the process for incorporation into the water sharing processes and plans.

Priority 3: Improve the health and resilience of water-dependent ecosystems

The actions shortlisted under this priority will:

- achieve shared benefits from water delivery and maximise environmental, social, cultural, and economic outcomes when water is used
- limit or remove pressures and impacts directly related to water infrastructure
- improve the health of water resources through better land management
- build knowledge and understanding of the region's surface water-dependent and groundwater-dependent ecosystems and assets and the impacts of climate change on their health and resilience
- improve connectivity with the Barwon-Darling River on a multi-valley scale.

Proposed action		Do you support this action?
3.1	Assess gaps in the flow regime that are preventing achievement of environmental watering objectives and identify cooperative actions to improve ecological outcomes	○ Yes ○ No
3.2	Identify regionally significant riparian, wetland and floodplain areas to protect or rehabilitate	○ Yes ○ No
3.3	Mitigate the impacts of water infrastructure on native fish	○ Yes ○ No
3.4	Fully implement the NSW Floodplain Harvesting Program	○ Yes ○ No
3.5	Remediate unapproved floodplain structures	○ Yes ○ No
3.6	Improve understanding of water use and water quality at priority locations in the Namoi	○ Yes ○ No
3.7	Investigate ways to improve connectivity with the Barwon-Darling River on a multi-valley scale	○ Yes ○ No
3.8	Increase our knowledge of groundwater in the Namoi region	○ Yes ○ No

A) Do you have any comments on the proposed actions identified?

The CEWO is supportive of the proposed actions shortlisted, noting that most of the options listed as a high priority in the previous submission (e.g. providing fish passage, mitigating cold water pollution, improving connectivity, reviewing water sharing plan rules for environmental water, pump screening and addressing floodplain structures) have been included in the shortlisted actions under Priority 3. We appreciate that the document acknowledges the limitations to using water for the environment to meet all environmental demands in the Namoi and Peel rivers, and the significant impacts that drought, regulation, and water extraction have had on these river systems. Those actions identified as a priority for the CEWO and comments made around them in the previous submission about these issues still stand.

The CEWO is supportive of assessing gaps in the flow regime that are preventing achievement of environmental watering objectives and identify cooperative actions to improve ecological outcomes (action 3.1). Identifying critical environmental needs in the Namoi region and how to address these during normal operations and extended dry sequences will be also important part of assessing these gaps, particularly under a drying climate (see previous submission). The draft strategy also acknowledges there is additional water (9.5 GL as at September 2022) left to recover in the Namoi Valley, which will improve capacity to meet some environmental demands.

All sources of water will be important in meeting environmental demands across the entire flow regime and supporting environmental outcomes in the Long Term Water Plan and Basin Plan. Action 3.1 considers reviewing water sharing plan rules around carryover of the environmental water allowance in the Peel Valley and protection of environmental water. This review should also consider carryover for General Security entitlements, to improve the capacity to use both planned and held water to meet environmental

demands in the Peel over multiple years. Actions that enable more flexibility in delivery and protection of environmental water will help improve the capacity of the CEWO and NSW environmental water managers to meet environmental outcomes in the Namoi Valley. Actions that will improve the security and capacity to use water for the environment to meet environmental demands will be critical to the long-term condition of the Namoi and Peel rivers.

As part of the work under action 3.1, held environmental water from the Peel River should be protected from re-regulation and extraction once it enters the Namoi River. This protection would provide connectivity benefits, supporting ecosystems downstream and enabling deliveries of held environmental water from the Peel and Namoi to be coordinated for a range of environmental benefits, contributing to Long Term Water Plan and Basin-wide environmental watering strategy outcomes.

The identification of areas of critical riparian, wetland and floodplain habitat and areas of high cultural value to protect and rehabilitate (action 3.2) would help improve river health and complement deliveries of water for the environment. These types of actions would work towards achievement of objectives and outcomes in the Namoi Long Term Water Plan, the Basin Plan and Basin-wide environmental watering strategy.

The combination of water re-regulation, infrastructure, pumping and river management for production has drastically affected native fish populations in the Northern Basin. The CEWO supports the range of proposed actions to mitigate the impact of water infrastructure on native fish (action 3.3) including fish passage, installation of fish screens on irrigation pump intakes and addressing cold water pollution. The timeliness of undertaking works to improve fish passage and cold water pollution in the Namoi and Peel remains a concern, considering the long time being taken to complete previous fish passage and cold water pollution commitments. Algal blooms limit the effectiveness of existing multi-level offtake structures in ameliorating cold water pollution. The measures adopted and technologies need to be effective, reliable and reasonably easy to implement, adjust and maintain. Operational protocols for all structures and technologies need to be developed with input from relevant water management agencies and be made publicly accessible to improve transparency.

The CEWO has previously made submissions on floodplain harvesting (action 3.4), the most recent to NSW's Select Committee Inquiry into floodplain harvesting, which sets out our position. These submissions can be found here: https://www.dcceew.gov.au/water/cewo/publications. It will be critical the NSW government demonstrates in practical terms, perhaps using case studies, how floodplain harvesting will be rigorously measured and monitored to allow effective compliance activities. The CEWO is aware of the compliance challenges of this form of take, which highlights the importance of integrating floodplain harvesting regulation with other rules to protect downstream outcomes.

The CEWO supports modifying or removing flood work structures that are causing adverse impacts, impede flows across the floodplain and/or impact on connectivity (action 3.5). Negative impacts to downstream connectivity should be considered in the granting of any approvals.

The CEWO is supportive of any increase in understanding of water use and water quality in the Namoi region (action 3.6). Real-time water quality monitoring key parameters such as dissolved oxygen and temperature would be beneficial during both normal and drought operations and river re-start protocols.

Improving the longitudinal connectivity from tributary catchments such as the Namoi to the Barwon-Darling (action 3.7) is critical to supporting riverine ecosystems and processes, food webs, productivity, water quality and native fish and other aquatic organisms in both these systems. Connectivity with the Barwon-Darling also has a range of social and cultural benefits. Connectivity still occurs during wet times but can be heavily impacted outside these times. The CEWO is supportive of options that improve connectivity along river and wetland systems and remove impediments to passage of fish and other aquatic biota. Protecting and restoring connectivity is an objective of the Basin Plan and an expected outcome of the Basin-wide Environmental Watering Strategy and will continue to be an increasing priority for the CEWO under a drying climate.

The CEWO is supportive of options to improve knowledge and protection of groundwater dependent ecosystems (action 3.8). This would help improve understanding of the potential impacts to these systems from water resource development, climate change, groundwater extraction and other factors. This work should be considered in implementation of other proposed actions including 1.5, 2.2, 2.5, 2.6, 2.12, 2.13.

5. Other comments

A) Should any proposed actions in this Consultation Paper not be shortlisted and why?

B) Should any other options in Attachment 1 of the Consultation Paper be shortlisted and why?

6. Implementation of the Namoi Regional Water Strategy

An Implementation Plan will be included in the final Namoi Regional Water Strategy.

A) Which actions should be implemented first and why?

The CEWO is supportive of the actions identified to enhance participation of Aboriginal people in water management as a high priority. The suite of actions would build capacity, support inclusion and real participation of Aboriginal people in water planning and management. The CEWO also recognises that the Traditional Owners were the first managers of Country and that incorporating their culture and knowledge into management of water in the region is a significant step for closing the gap.

All options should be evaluated in terms of their ecological sustainability and economic viability and consider the priorities under the *Water Management Act 2000*. Options that enable environmental outcomes to be achieved from all water sources (e.g. improving fish passage, connectivity options) should be a priority and complement each other. These options support achievement of the environmental objectives/outcomes in the water sharing plans, Long-Term Water Plan and Basin Plan.

The CEWO is also supportive of further development of the following actions as a high priority for the reasons outlined above in no particular order of priority:

- Mitigate the impacts of water infrastructure on native fish
- Assess gaps in the flow regime that are preventing achievement of environmental watering objectives and identify cooperative actions to improve ecological outcomes
- Identify regionally significant riparian, wetland and floodplain areas to protect or rehabilitate
- Investigate ways to improve connectivity with the Barwon-Darling River on a multi-valley scale
- Fully implement the NSW Floodplain Harvesting Reforms
- Remediate unapproved floodplain structures
- Improve understanding of surface and groundwater systems and water use and water quality
- Enhance Aboriginal participation in water management

Making your submission public

To promote transparency and open government, we intend to make all submissions publicly available on our website, or in reports. Your name or your organisation's name may appear in these reports with your feedback attributed.

If you would like your submission and/or feedback to be kept confidential, please let us know when making your submission.

If you request that your submission is to be kept confidential, it will not be published on our website or included in any relevant reports; however, it will still be subject to the *Government Information Public Access Act 2009*.

Your submission will be stored securely, consistent with the department's Records Management Policy and you have the right to request access to, and correction of, your personal information held by

the department.

Further details can be found in our privacy statement available on our website.
www.industry.nsw.gov.au/privacy

7. Information on confidentiality and privacy *

I give permission for my submission to be publicly available on the NSW Department of Planning and Environment website.

● Yes ○ No

I would like my personal details to be kept confidential.

● Yes ○ No

8. Would you like to be kept updated on progress on the development and implementation of the Namoi Regional Water Strategy?

○ Yes ○ No

If yes, please provide your details below.

* Email address:

* Name:

* Address:

* Contact phone number:

9. How did you hear about the Public Exhibition of this strategy?

We are interested to know how you heard about the opportunity to make a submission. Please indicate the communication methods below:

- ☐ Newspaper
- ☐ Radio
- ☐ Department of Planning and Environment website
- ☐ Direct email
- ☐ Social media
- ☉ Have your say NSW Government website
- ☐ Communication from peak body
- ☐ Word of mouth
- ☐ Other (select and provide details)

10. Additional Information

If you would like to provide any supporting documents to help us understand your feedback, please email these from the same email you provided in this form or attach supporting documents to this form if you are returning your submission by mail.

All submissions on the draft Namoi Regional Water Strategy will be reviewed following the public exhibition period.

Please email your completed submission and any supporting documents to:

regionalwater.strategies@dpie.nsw.gov.au

CLICK HERE TO EMAIL SUBMISSION

Or post to:

Regional Water Strategies
Department of Planning, Industry and Environment
Locked Bag 5022
Parramatta NSW 2124

Submissions close Sunday 18 September 2022, 11.59pm

Further details on all regional water strategies can be found on our website
www.dpie.nsw.gov.au/regional-water-strategies

Thank you for your submission.

NSW GOVERNMENT

Submission to the draft regional water strategy- Namoi Peel

Dear Sir,

I will confine my submission to issues affecting the Peel area.
I will try to take a long term view, with the growth and prosperity of the Tamworth area in view.
I see this draft strategy as being mainly driven from a Council perspective. While this is of great importance, it does not appear to give irrigation any priority. After attending a public meeting in Tamworth I do see some attempt to address this.
Irrigation supports a large portion of, and is woven into the fabric of the community. Hay , grain, sheep, cattle, dairying, stock agents, rural supplier's to name a few before we get to the general community.
The Chaffey Dam was built to supply the irrigation industry. Many built their businesses or moved to the Tamworth area on this basis. While the supply of water to Tamworth City is essential the proposal to increase the water supply in Chaffey for the city shouldn't be part of the proposed actions.
Two examples from the height of the last drought- Our farm supplier said Irrigators are the only ones buying anything. Wool brokers were reporting 30-40% lambings. With a little underground water our lambing fell from 120%+to 100%.
Thus irrigation should be given a priority under the water strategy.
It is essential that the proposed Dungowan Dam be built . It is a short term measure to ensure Tamworth City has water for immediate needs and can continue to safely grow..
I agree with the strategy paper that it is unacceptable that Tamworth could run out of water and trucking in water is not an option. Action 1.1 As agreed in the strategy there is great potential for growth in the area. Tamworth City is now becoming a mighty industrial hub. With growth in food processing industries.eg chicken rearing and processing, and abattoirs. They are surrounded by efficient supporting agricultural businesses. Irrigation industry again.
The expenditure of funds for water security, while they appear to be costly now as industry and farming grows,will generate significant returns on funds in the future.
I support recycling should it prove economically viable, but is not a long term solution.
Realistically taking a forward view the only secure way forward is to obtain water from a different rainfall area. We all know rainfall east of the Great Dividing Range is greater than the west. This should be a guiding principle.
Under the actions listed in the Regional Water Strategy's the only one that fits is the Manning-Barnard. It may be the best solution. I don't have enough detail. It should be positive for the Basin Plan. It should stop water going out to sea .
Another possible solution may be to bring water from the Aspley via Roumalla creek and the MacDonald. This would have the benefit of supplying water also to the Namoi. Hopefully water could be supplied from the MacDonald for irrigation and Tamworth City. Otherwise water could be delivered from Keepit dam.
Whatever over the range solution is chosen the following need consideration. Water needs to be supplied to Tamworth City and Peel valley irrigation and perhaps the Namoi. Flood mitigation may be an option for East of the range. Some aspect's of the Clarence scheme may be worth consideration, my knowledge of this is poor.
I would support initiatives as suggested in 3.1. Thus to combine to mimic natural rates of rise and fall, in releases from dams, combining with stream flows and release of irrigation water. It is a sore point ,in the Peel Valley, that environmental releases from Chaffey dam become irrigation water after passing through Carol Gap. This especially the case when the environmental requirements were close to Chaffey dam and after this point was unable to be used by Peel irrigators, was available to Namoi irrigators. Note, the total use ,by council irrigators and others is only 5%.
I trust you will find these comments helpful.

[redacted] [redacted]

Date	First name	Last Name	Email address	Device Type	Address	Phone number	Do you identify as an Aboriginal person:
2022-09-02 17:04:34 +1000	Dianne	Hockey	giag.dianne@bigpond.com	Desktop	Springfield, 398 Clift Road, Spring Ridge NSW 2343	417679514	No

Are you making this submission as an individual or as a representative of an organisation?	If making this submission as a representative of an organisation, who do you represent?	Do you agree that these are the priority water challenges for the Namoi region that we need to focus on?	Please outline what you see as the priority water challenges in this region over the next 20 – 40 years?	Proposed actions to support water needs of Tamworth and other towns	Do you have any comments on the proposed actions identified?	Supporting a growing regional community under a more variable and uncertain future climate	Do you have any comments on the proposed actions identified?
Individual							

Improving the health and resilience of water dependant ecosystems	Do you have any comments on the proposed actions identified?	Which actions should be implemented first and why?	I give my permission for mysubmission to bepublicly available on the NSW Department of Planningand Environment website.	I would like my personal details to be kept confidential.	Would you like to be kept updated on progress on the development and implementation of the Namoi Regional Water Strategy?	Please provide your details below. - Email address

Please provide your details below. - Name	Please provide your details below. - Address	Please provide your details below. - Contact phone number	How did you hear about the Public Exhibition of this strategy?	Do you agree that these are the priority water challenges for the Namoi region that we need to focus on?
				No

Please outline what you see as the priority water challenges in this region over the next 20 – 40 years?
My area is considered to be a part of the Upper Namoi Catchment but it doesn't suit the current floodplain regulations..... they are outdated for the area know as Goran Basin and following are my concerns for this small area; 1) Soil quality, soil loss and soil sustainability 2) The ecology of our floodplain 3) Economical sustainability supporting our community 4) Social impacts of flooding, including employment, schooling and productivity 5) Environmental concerns because of outdated government data and regulations in management of our floodplain 6) There has never been a flood study completed for the lower Yarraman Creek Floodplain 7) In fact the only data or studies done for the Liverpool Plains are now so out of date they are not applicable because of changes in agricultural production in the region 8) Current floodplain mapping for our region is not accurate and it impacts on landholders ability to manage their lands to remain productive and sustainable 9) the lower Yarraman Creek Landholder Group have made a number of submissions to WaterNSW, DPE about destructive and uncontrolled water flows with no outcomes having been reached due to DPE floodplain management regulations that do not suit our area and need to be urgently reviewed and addressed 10) The economic and social impacts on our small region are a cost to the State, Local government and landholders Summary: These challenges for our area known as the Goran Basin are critical now..... I request DPE seriously look at the Goran Basin as being a separate catchment requiring a very different set of regulations for water management because of the public infrastructure across our floodplain that is having major impacts on the social, economic and environmental well being of our small but very vital area for a sustainable future of the Spring Ridge and Quirindi districts.

Proposed actions to support water needs of Tamworth and other towns	Do you have any comments on the proposed actions identified?	Supporting a growing regional community under a more variable and uncertain future climate	Do you have any comments on the proposed actions identified?
{"Action 1.1 - Supporting the long-term water needs of Tamworth and other towns in the region":{"Do you support this action?":"Yes"},"Action 1.2 - Drought management planning for towns":{"Do you support this action?":"Yes"},"Action 1.3 - Stronger focus on water efficiency and demand management for towns":{"Do you support this action?":"Yes"},"Action 1.4 - Advanced water treatment facility for industries reliant on town water supplies":{"Do you support this action?":"Yes"},"Action 1.7 - Addressing water related skills shortages in small councils ":{"Do you support this action?":"Yes"}}	Tamworth is a growing regional city - water security is a priority for growth and lifestyle	{"Action 2.1 - Invest in continuous improvement to surface water system modelling in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.2 - Accelerate investment in groundwater modelling in the Namoi region ":{"Do you support this action?":"No"},"Action 2.4 - Improve public access to climate information and water availability forecasts ":{"Do you support this action?":"Yes"},"Action 2.5 - Undertake research to inform reviews of groundwater extraction limits":{"Do you support this action?":"Yes"},"Action 2.11 - Support increased investment and research into industry climate adaptation":{"Do you support this action?":"Yes"},"Action 2.12 - Increase transparency in the management of groundwater resources in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.13 - Investigate managed aquifer recharge in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.14 - Ensure water can support sustainable economic diversification and transitioning economies":{"Do you support this action?":"Yes"}}	Tamworth is the Peel Catchment and actions should only relate to that catchment area - every catchment has different needs

Improving the health and resilience of water dependent ecosystems	Do you have any comments on the proposed actions identified?	Should any proposed actions in this Consultation Paper not be shortlisted and why?	Should any other options in Attachment 1 of the Consultation Paper be shortlisted?	Which actions should be implemented first and why?
{"Action 3.1 - Assess gaps in the flow regime that affect the health of the environment ":{"Do you support this action?":"Yes"},"Action 3.2 - Identify regionally significant riparian, wetland and floodplain areas to protect or rehabilitate":{"Do you support this action?":"Yes"},"Action 3.4 - Fully implement the NSW Floodplain Harvesting Program":{"Do you support this action?":"No"},"Action 3.7 - Investigate ways to improve connectivity with the Barwon–Darling River on a multi-valley scale":{"Do you support this action?":"Yes"},"Action 3.8 - Increase our knowledge of groundwater in the Namoi region":{"Do you support this action?":"Yes"},"Action 3.6 - Improve understanding of water use and water quality at priority locations in the Namoi":{"Do you support this action?":"Yes"},"Action 3.5 - Remediate unapproved floodplain structures":{"Do you support this action?":"Yes"}}	I would like to see a program to address the slowing down of water flows from the Upper Catchment areas so as our acquifers have the ability to recharge and our floodplain soil are not compromised and washed downstream	It would be preferable if there was a lot more direct consultation with individual landholders and the Upper Namoi catchments. One size does not fit all especially in addressing changes in our environment. The emphasis appears to be on urban areas and their water supply future with very little concern for landholder production and growth and their water and environmental security.	A review of the environmental management of the very Upper Catchments of the Namoi where the floodplains are more like plateaus because of their elevation and difference to the large river floodplains of the northern and western areas is essential for future sustainability of both soil and water and future prosperity of our region.	The implementation of the Namoi Regional Water Strategy should not commence until all issues have been actioned particularly in the smaller areas of our region where the issues are just as important. Soils and Water are our most precious resources for life and the sustainability of our regions and we all deserve to have our issues adequately addressed before implementation of the Strategy. There is still a lot of work that has not been done that is necessary for the future security of our area on the Liverpool Plains.

I give my permission for my submission to be publicly available on the NSW Department of Planning and Environment website.	I would like my personal details to be kept confidential.	Would you like to be kept updated on progress on the development and implementation of the Namoi Regional Water Strategy?	Please provide your details below. - Email address	Please provide your details below. - Name	Please provide your details below. - Address	Please provide your details below. - Contact phone number
Yes	No	Yes	giag.dianne@bigpond.com	Dianne	Springfield, 398 Clift Road, Spring Ridge 2343	417679514

How did you hear about the Public Exhibition of this strategy?
Social media

Submissions on are due by midnight Sun 18th Sept. Email subs to regionalwater.strategies@dpie.nsw.gov.au

Thank you for the opportunity to make comment on the Draft Namoi Regional Water Strategy and the work done in preparing this document.

I welcome the inclusion of acknowledgement of First Nations people's involvement *'We recognise the Traditional Owners were the first managers of Country and by incorporating their culture and knowledge into management of water in the region is a significant step for closing the gap.'* and support the immediate consultation for caring for country, systems thinking and relationality that indigenous wisdom can bring to this conversation.

In regard to the ongoing mining in our region I **strongly oppose** any further mining of coal or gas in the Namoi region due to impacts on water and also further impacting climate change which this report is trying to adapt and mitigate.

Overall, I wish to also

1. Support protection of native fish and environmental health of rivers.
2. Support high priority for water efficiency and demand management for towns and industry including purified water recycling.
3. Support high priority for removal of unapproved structures on floodplains
4. Support higher flow targets to improve connectivity to the Barwon-Darling/Baaka.
5. Support improved outcomes for First Nations water access
6. Support more flow gauges in Namoi catchment.
7. Support improved management of groundwater.
8. No support for proposed Dungowan dam
9. No support for gas or coal industry in Namoi Valley
10. No support for implementation of current floodplain harvesting policy.

The terror of the last drought is never far from my mind.

[redacted]

Peel Alluvium (Cockburn River Alluvium Management Zone)

Cockburn Review

This submission should be read in conjunction with Dr Peter Bacons Study.

Background

We are a farming family, who have been irrigation farmers in the Cockburn Valley since 1863.We hold a number of Water Access Licences (WALS) for both surface water and ground water.

Annually, our enterprise contributes in excess of $[redacted] to the local economy. [redacted]

The [redacted] is widely recognised as having some of the richest alluvial soil in Australia, having grown crops such as, tobacco, vegetables of all types, grain and fodder crops, as well as a thriving dairy industry.
In more recent times, lucerne hay is the main crop grown, but other crops include: turf, pecan nuts, viticulture, winter grain crops, summer grain crops, fodder crops, such as oaten, corn and wheaten hay/silage.
Other crops successfully grown are potatoes, sweet corn, peanuts, hybrid corn seed production and hybrid oat seed production.

The Horse stud industry is also well represented in this valley.

Plans are also under consideration for a medicinal cannabis growing and processing enterprise is this valley.

The average property size in the Cockburn Valley is 40 ha, relying heavily on irrigation for viability. Without irrigation this valley produces nothing.

Issues

We support the Cockburn Valley Water Users submission to the review, with the amendments made to the submitted submission.
We understand Fisheries have not completed the Cockburn River pool study. **How is it possible for Fisheries to form any opinion on the activities of irrigators, if they have not completed the study?**

The [redacted] ground water irrigators have used approximately 1200 mega litres of their 4481 mega litre entitlements during the last water year.

HIGH Connectivity.

Due to the suspension of the high connectivity rule in 2014, the Cockburn Valley Ground Water Irrigators have never operated with the 28 day CTP rule in place.

Over a period of many months and flow conditions, we conducted our own sampling of both ground and surface water, and we then forwarded those samples to a reputable firm to test for uranium, which is a natural occurring element in surface water of the Cockburn River.

These results showed extremely low connectivity. **(attachment: figure 12,** [redacted] natural resource scientist).

At the information session (27/06/2019) an Analytical Model was tabled by [redacted], which stated 1045 ML was pumped from ground water, with cumulative losses induced from the river calculated to be 500 ML.

This would indicate a connectivity of <50%.

A report commissioned by The [redacted] Water Users Association in 1999, and compiled by [redacted] River Planner with the Department of Land & Water, states the bed lowering and bank erosion is severe for the length of the Cockburn R between Ballantine's Bridge and the confluence with the Peel River.

In 1999, bed erosion of up to 4 metres was evident in places, [redacted] stated.

A cross section at Nemingha, figure: 13, was in a status report commissioned in 2010.

A lot has changed in the Cockburn R since <2010 with the continued erosion of the riverbed. In many places the river is eroded down to almost bedrock, -3metres (Figure 13b Bath Stewart surveyors July 2019).

The hydrology from river to bore is reduced dramatically due to river bed lowering.

We understand and accept that there is some minimal connectivity between river water and ground water.

The ground water irrigators of the [redacted] have never been subjected to any pumping with a highly connected condition enforced or in place.

Irrigators were advised of a suspension of this rule in 2014, after a failed attempt by the Office of Water to introduce the connectivity rule in 2010.

Maintaining pools.

The [redacted] Irrigators should be congratulated for the way the river and ground water extraction has been managed during the worst drought in history.
River pools have been maintained for an extended period with only two occasions in the last 20 months where there has been any flow in the river. The number and size of river pools is significant (see attached photos), with acceptable fish habitat.

Conclusion.

It is very disappointing to discover DOL Water and other agencies were developing the draft plan without any input from the local landholders and irrigators, particularly after a direction was given by the previous Minister for Water Niall Blair, to the effect that the water users were to be consulted during the review.

Groundwater irrigators cannot, and will not accept that the [redacted] alluvium is a highly connected system with a 28 day CTP condition.

A satisfactory outcome has to be achieved at follow up meetings with the department of Industry and Water and Cockburn Valley Irrigators.
Should the connectivity condition become part of the alluvium water sharing plan for the Cockburn Valley, we will be severely financially impacted, being unable to meet our commitments, and with probable staff cutbacks, and possible mental health implications

Attachments:

Regarding requirement to cease to pump.
Author [redacted]

Quantifying facts in [redacted]
Presenter: [redacted]

Several recent photos of pools in the [redacted]

[redacted]

[redacted]

WAL holders and members of
[redacted] **Water Users and Landcare Association.**

Submission to

DEPARTMENT OF INDUSTRY WATER

Regarding requirement to cease pumping of groundwater at

'Gunnadoo'

and

'New Haven'

Back Kootingal Road

Kootingal

Contents

1. BACKGROUND

The current drought in much of NSW has resulted in reduced stream flows. In some cases cease to flow conditions prevail.

In response, the DoI Water has placed bans on drawing irrigation water directly from some watercourses. The Cockburn River is in one of these catchments.

Consequently, the [redacted] who operate a lucerne-based enterprise at [redacted] and the adjacent property, [redacted] on the [redacted] have stopped pumping from the Cockburn River.

However the properties also have a series of bores on them. These are used to irrigate perennial lucerne.

DoI Water has proposed to ban use of these bores.

This submission is in response to this proposal.

The submission provides evidence of:

- Lack of connectivity between the bores and the Cockburn River
- The irrigation efficiency of the current enterprise
- The perennial nature of the lucerne crops and its irrigation system
- The minimal if any impact of the bores on the chain of ponds system currently evident in the Cockburn River in the Kootingal District: and
- therefore the lack of evidence that the irrigation is impacting on the ecology of the Chain of Ponds'.

The preparedness of the [redacted] family to make further improvements in the efficiency of groundwater use is emphasised.

The family request that they be allowed to continue efficiently irrigating from their current bores.

Submission author

This submission was prepared in close collaboration with the [redacted] Family. The assistance of [redacted] is also acknowledged.

[redacted] has worked on environmental, social and economic aspects of water supply throughout Australia and overseas for the last 30 years.

Relevant projects include:

- Impact of environmental flows on use of ground and surface water sources by Macquarie Mash vegetation.
- Soil, vegetation and primary production responses to environmental flow in the Murray River.

- Impact of floodplain development on the Darling River System around Bourke
- Assessment of Stream Restoration and Aquifer Management Options for Borambil Creek (with MHL).
- Investigation of Curlewis Water Supply
- Assessment of the Gunnedah Water Cycle.
- Options for improving water supply efficiency in Crooked Creek (Warren)
- Development of environmental strategies for regulated discharge from the Nepean, Avon, Cataract and Cordeaux Rivers
- Assessment of water needs in the Liverpool Plains LGA.

His background in irrigated agriculture and environmental management of water make him uniquely suited to address current issues in water management in the lower Cockburn River.

2. CURRENT CONDITIONS IN THE LOWER COCKBURN RIVER AND ITS CATCHMENT

An inspection of the lower Cockburn River and surrounding lands was undertaken on Friday 5th July, 2019 by [redacted] in the company of [redacted]

Figure 1. The lower Cockburn River has extensive floodplains once it emerges from confining hills.

Along the left bank the floodplain is up 2km wide.

Figure 2. Lucerne is the main crop on the Coxhead properties. It is intensively managed, and irrigation is an essential part of the farm activities.

The image above shows the positive impact of irrigation on plant growth and health.

Figure 3. The Cockburn River adjacent to the Coxhead property.

One of the local landholders has been measuring change in water depth in the river.

A series of reference points for measuring change in water level have now been installed.

The water level in the chain of ponds along the northern side of the properties has risen by 5mm in the past 3 weeks. There is also outflow from the ponds (see photo below).

Figure 4. The Cockburn River is currently a 'chain of ponds' system

On Friday 5th July 2019 there were small outflows from the ponds. The indicative flow at this point was around 0.4 ML/day.

Figure 5. The Cockburn River has been severely impacted by gravel extraction. Bed lowering is obvious in some stretches. In this area the ponds can be 0.8 km long and are separated from up and downstream ponds by short riffle zones. Water was flowing over these riffles in early July 2019.

Figure 6. Some of the ponds are over 2m deep and European Carp are obvious in the clear water.

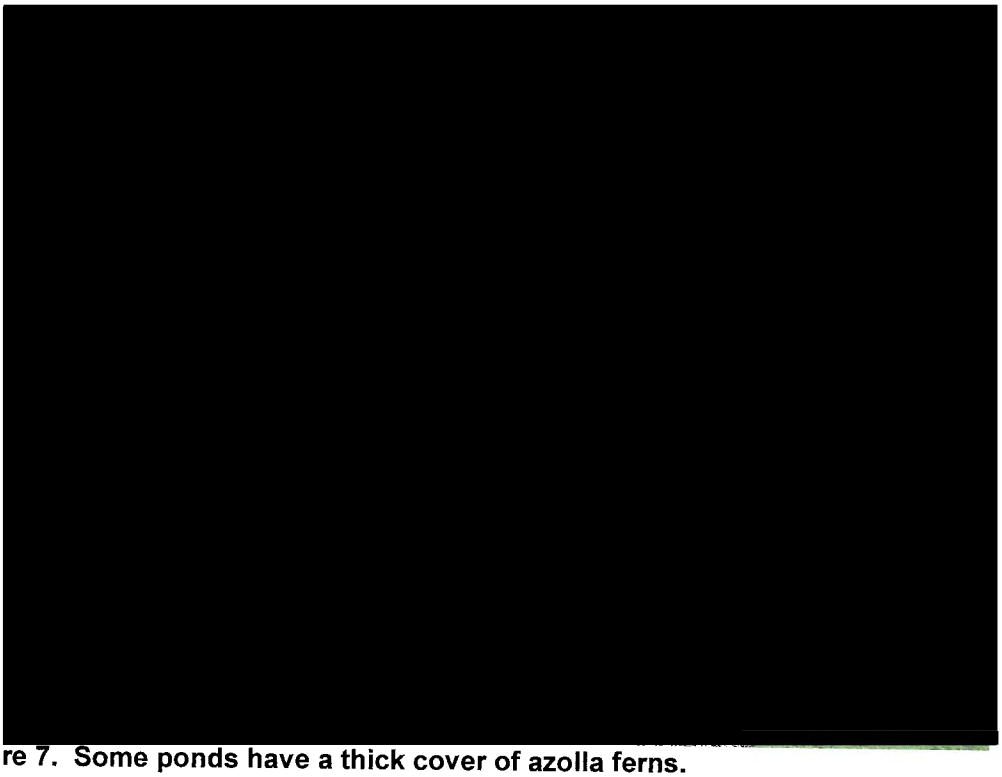

Figure 7. Some ponds have a thick cover of azolla ferns.

Figure 8. Bore location varies with respect to the river. The bore above is close to the far edge of the floodplain.

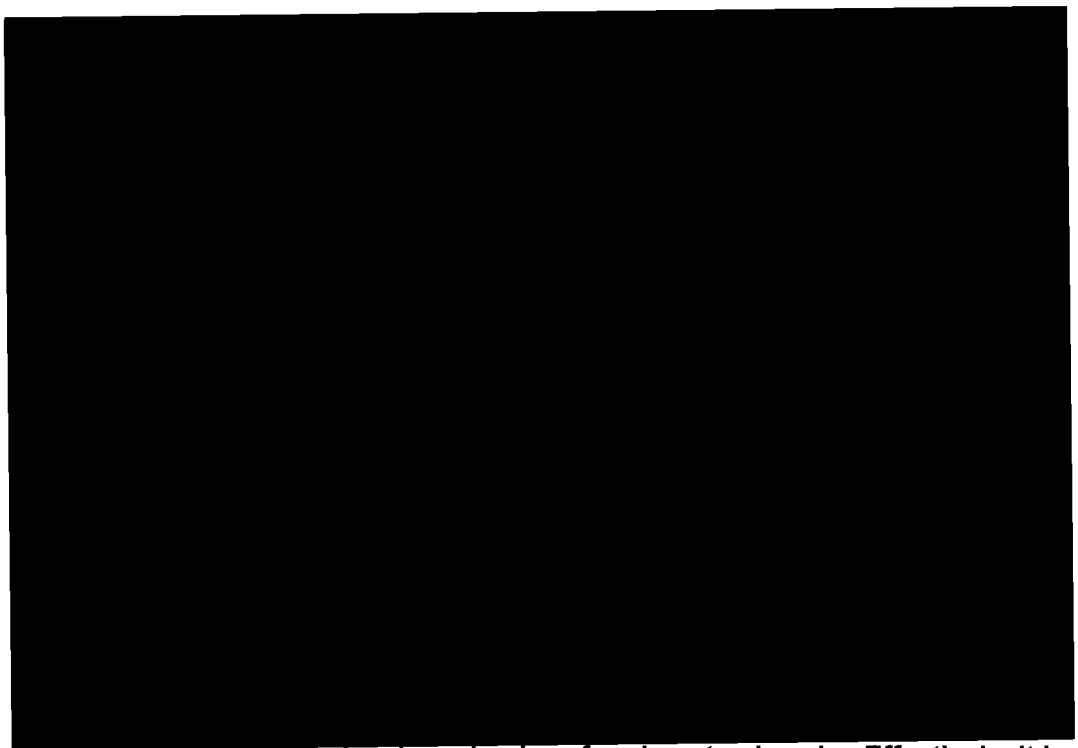

Figure 9. Some of the lucerne has been in place for almost a decade. Effectively, it is now a perennial crop.

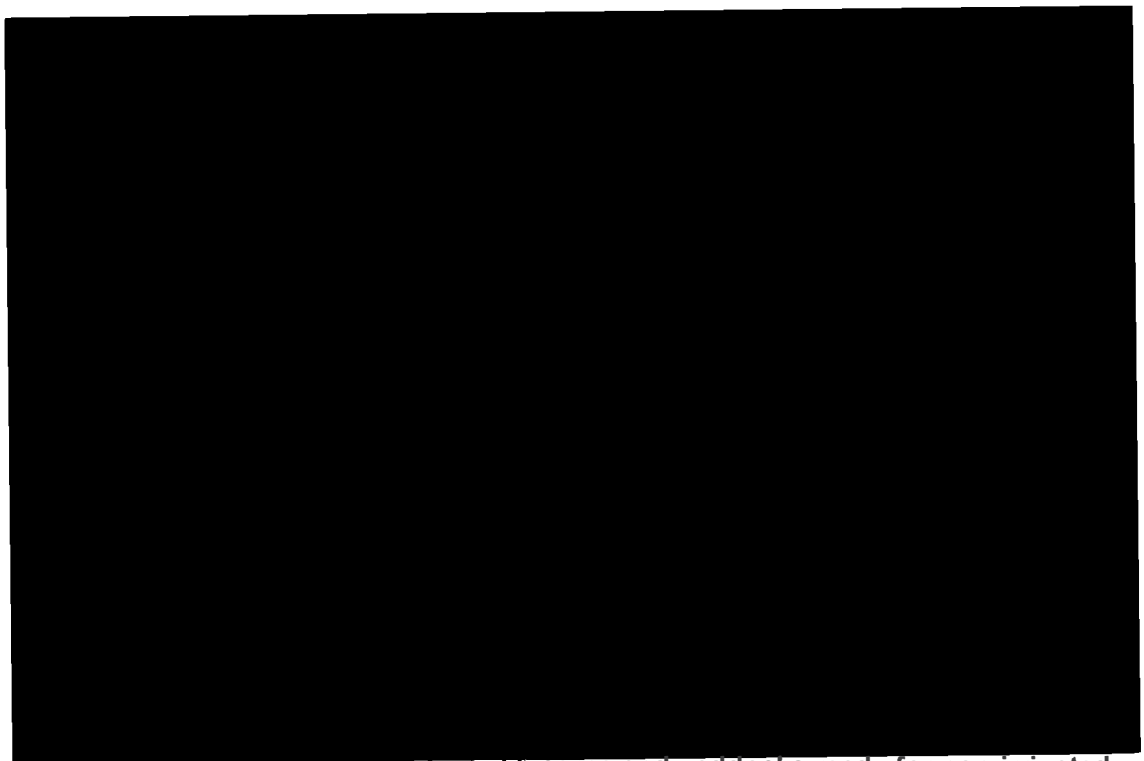

Figure 10. The boundary between irrigated lucerne and paddocks ready for non-irrigated crops is obvious.

Figure 11. The impact of no irrigation is very obvious on this turf farm.

3. ARE THE BORES ON THE [redacted] PROPERTY 'CONNECTED' TO THE COCKBURN RIVER?

This question is important because the DoI, Water have foreshadowed a ban on pumping from flood plain bores.

This question can be answered via examining the chemistry of the water in the Cockburn River and the chemistry of the water from the bores. Kootingal Village water source was changed because of the presence of naturally occurring Uranium in the water supply from the Cockburn River. This was used a tracer to assess the potential for connectivity between water surrounding the bores and the river water.

It is obvious in figure 12 that the water sources for the local watercourses are different to those supplying the bores on the 'Gunnadoo' and 'New Haven Park' properties owned by the [redacted] family.

If the groundwater flow under the alluvial lands to the river were significant compared with river flow (i.e. a 'gaining' stream'), then there would be significant dilution of the uranium concentration in the river as it moved down stream.

Conversely if water was flowing out of the Cockburn River, via a cone of depression, to the bore head the uranium concentration in the bore water should increase during periods of pumping.

If this process is NOT significant then the uranium concentration in the bore waters should be relatively low compared with that in the Cockburn River.

The graph above shows this is the case.

The evidence above is limited, but does suggest minimal connectivity.

Impact of pumping on water behaviour

Pumping creates a 'cone of depression' around the suction point. Water in the aquifer then flows towards the suction point under gravity. It its simplest form the rate of flow can be described by Darcy's Law.

A key coefficient in this law is the gradient created by the cone of depression.

Figure 13 sets out the relative level for the bores and the Cockburn River.

Conceptual model

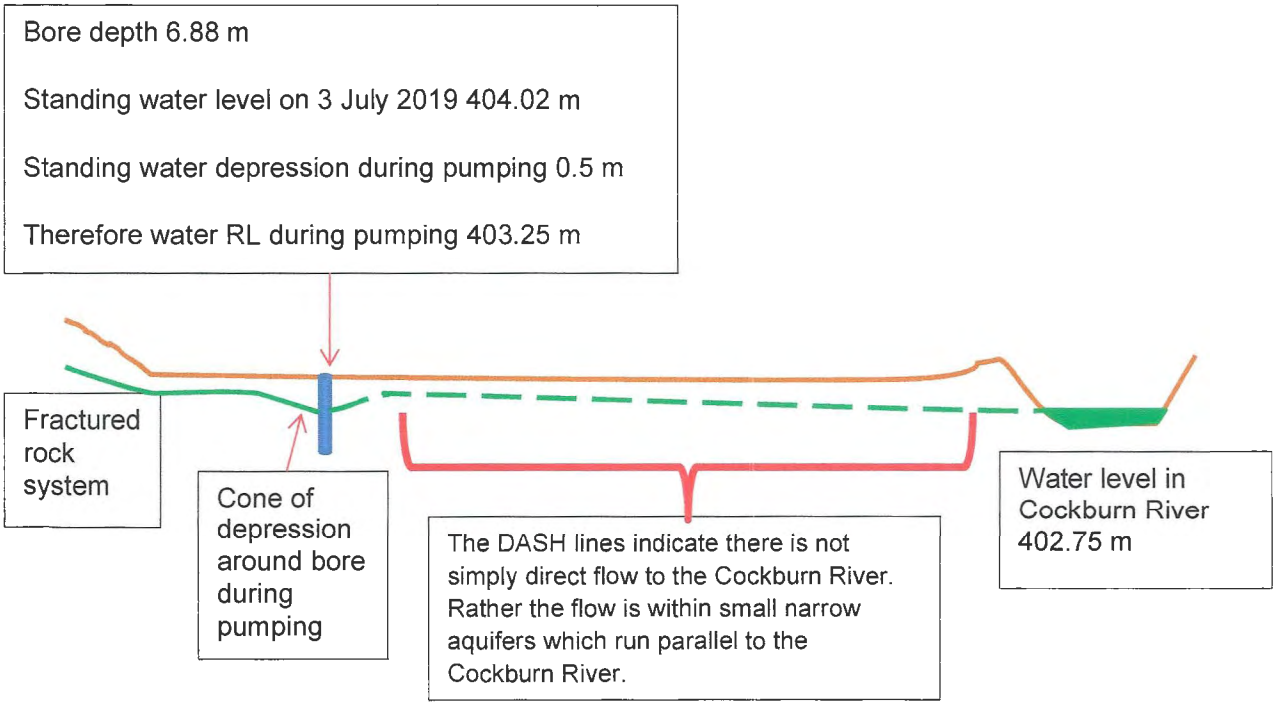

Figure 13. The bore standing water level is close to the water surface level in the Cockburn River. Pump down typically creates a 0.5m maximum depression.

The figures below show the current RLs between the standing water level in the bores and the surface water level in the Cockburn River.

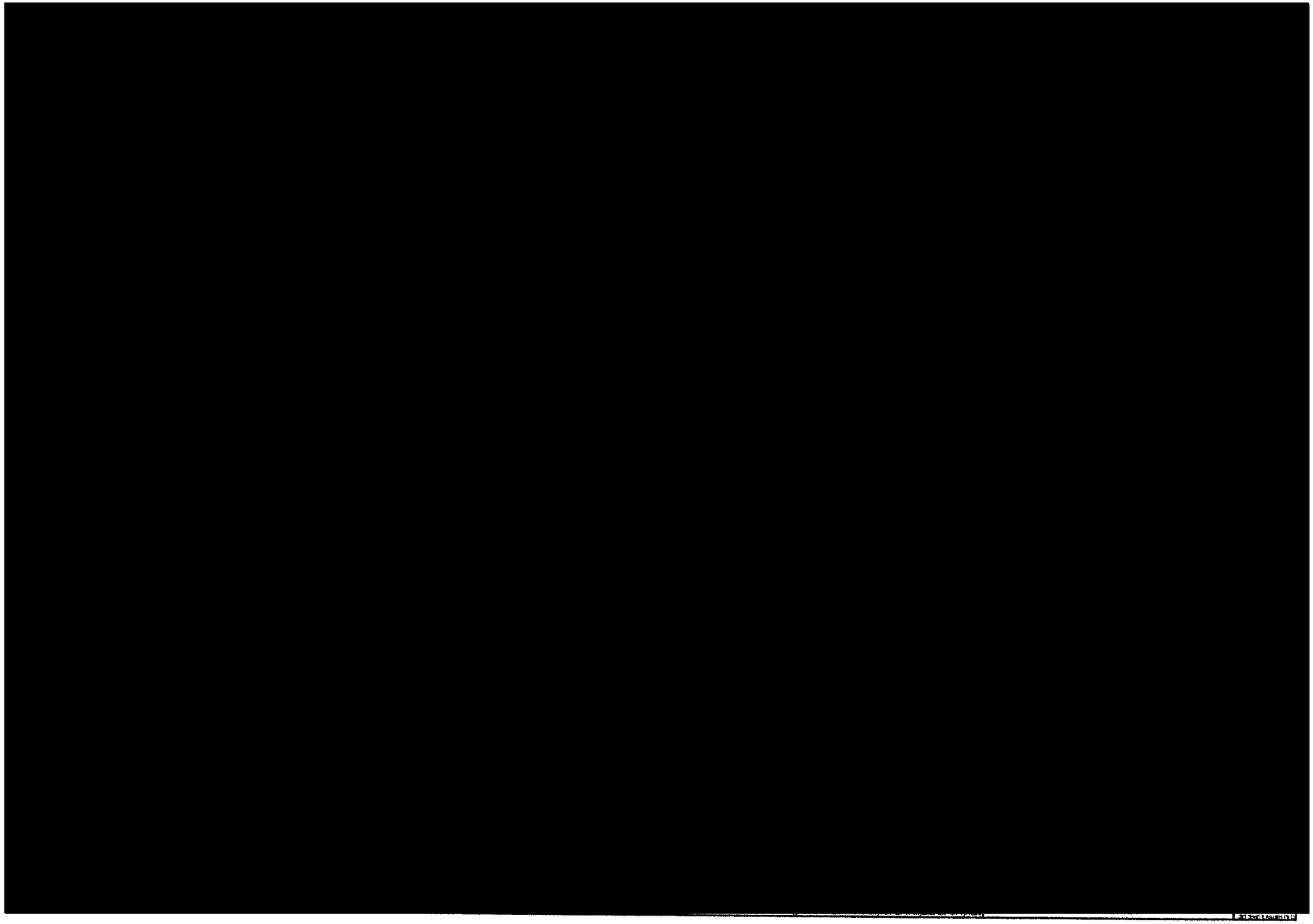

Figure 14. The horizontal distances from the bore on New Haven Bore No. 1 and Gunnadoo Central Bore and the Cockburn River.

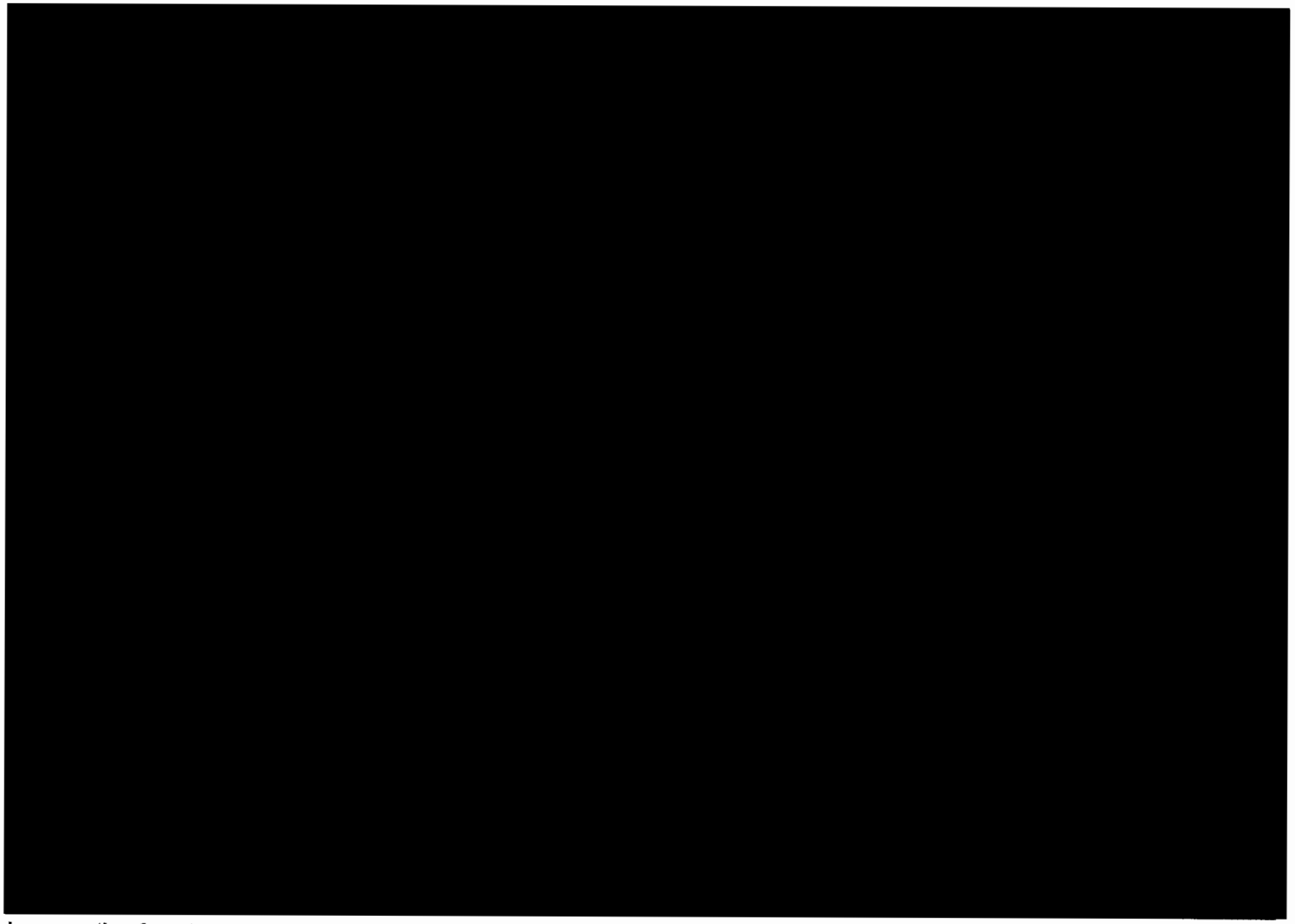

Figure 15. Long section from New Haven Bore No 1 to the Cockburn River. Water level in bore was 404.02 m, water level in Cockburn was 403.52m.

Figure 17. Long section from Gunnadoo Centre Bore to the Cockburn River. Water level in bore was 403.36 m, Water level in Cockburn was 402.75m

The drawdown during pumping is above the RL of the Cockburn River water surface, so in theory the water should flow towards the river even when the bore is being pumped down. However, the Uranium data suggests that there is no major change in uranium concentration as the Cockburn River flows past the alluvial irrigation areas.

Conclusion

The interaction between the bores and the Cockburn River needs further investigation, but based on the currently available evidence, there is no reason to believe there is significant connectivity between the bores and the Cockburn River.

4. THE IRRIGATION EFFICIENCY OF THE CURRENT ENTERPRISE

Aim of this section of the submission

- To demonstrate that the [redacted] family's irrigation system is perennial and extremely efficient.

Crops grown

Lucerne is the main crop apart from some maize and some winter cereals such as wheat and barley.

Change in Lucerne cultivars

Changes in the lucerne cultivars over the past 2 decades has resulted in more perennial lucerne crops. Seven or more years of productive lucerne forage cropping can now be achieved under irrigation.

This is important as it means that investment in long term, efficient, irrigation is now possible.

Conversely it also means that cutting off irrigation results in major loss of yield from these high yielding perennial plants.

Spray irrigation

Spray irrigation was the standard practice on Gunnadoo until the perennial lucerne cultivars became more available.

Spray irrigation is relatively cheap to use and has the advantage that the wetted area is relatively easily identified. Use of linear 'runs' is more efficient than centre pivot systems as the entire paddock can be relatively evenly irrigated.

Subsurface irrigation

Drip based sub-surface irrigation facilitates optimum water use efficiency.

At Gunnadoo, the emitters are 450 mm below the soil surface. Consequently evaporation from the soil is minimal. The irrigation duration can be adjusted to ensure there is minimal deep drainage losses[1].

Additionally, the irrigation frequency can be adjusted to ensure that moisture sensitive growth phases can be taken into account.

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[1] NOTE any drainage losses will flow along gradient to the Cockburn River.

Indicative water use on lucerne

The irrigation application rate is 20,000L/ha/hr. Typically 40 hr of irrigation is required /cut of lucerne. That is, 0.8ML of water produces 1 cut of lucerne. There are normally 6 cuts of lucerne plus 1 cut for silage per/year, so the annual irrigation is 5.6 ML/ha/year.

The lucerne yield at Gunnadoo is 24 to 28 T (15% moisture) /ha/year. This is up to 40% more than the 20T/ha/y cited by NSW Agriculture for lucerne under intensive irrigation using effluent (NSW Agriculture (1997).

The lucerne yield is 1 tonne/20 mm of irrigation (or 5 T/ML of applied irrigation). This is extremely efficient use of water. The key reasons for this are relatively low runoff loss of rainfall and virtually zero loss of irrigation water via evaporation.

The average annual rainfall in the area is 630 mm (BoM), so the yield/mm of water assuming 1190 mm (5.6+6.3 ML/ha) of water is 20 to 24 kg of lucerne/mm of water. This figure is slightly better than the 13 to 20 kg of lucerne/ mm of water reported for northern Victorian lucerne under subsurface irrigation (Lattimore, 2005).

Value of the lucerne

The key value of the subsurface irrigation system is that it allows efficient production of high quality fodder even in drought conditions.

Gunnadoo and New Haven currently supply forage lucerne to the animal industry throughout eastern NSW. The reliability of feed source is vital for landholders whose paddocks are virtually devoid of food, yet their breeding stock are essential for the future.

The lucerne is also an extremely valuable crop.

The sale price is obviously market driven, but first grade lucerne currently fetches $400/tonne or $10,000/ha for 25 T of first quality hay.

Cost of the irrigation system

The cost of the subsurface irrigation system is typically $13,500/ha. The [redacted] family commenced installation in 1994 and now have 141 ha of subsurface irrigation.

The capital cost has been approximately $1.9 m

This is obviously a large capital investment in a system that is 'sustainable' from economic, social and environmental viewpoints.

Threats

In undertaking this large investment and utilising perennial type lucerne, the [redacted] Family have invested in the future. Their system uses water frugally with minimal evaporative loss to the atmosphere. (note transpiration 'loss' via plant stomata still occurs).

The proposed ban on them using their efficient irrigation system is an existential risk to the industry they have established.

5. RISK THAT THE IRRIGATION SYSTEM WILL IMPACT ON AQUATIC FAUNA REFUGES

During low flow conditions, the Cockburn River consists of a series of ponds, each up to a kilometre long, with short riffles between them.

These 'chain of ponds' typically have a maximum depth of around 2m. Cease to flow conditions occur rarely even in severe drought.

Figure 18 shows drainage out of one of the ponds.

Figure 18. Outflow from one of a 'chain' of ponds. (photo P. Bacon, taken 3rd July, 2019).

Figures 5 and 6 show the pond configuration.

Typically the river is incised 4 to 6m into the floodplain. It is understood that gravel extraction has contributed to bed lowering and consequent disconnection between the river and the floodplain.

An unintended consequence of the gravel removal has been the increased depth of this 'chain of ponds' system.

This has improved habitat by creating effectively permanent ponds within the deeply incised river system. Unfortunately carp have colonised this stretch of the river as figure 19 shows.

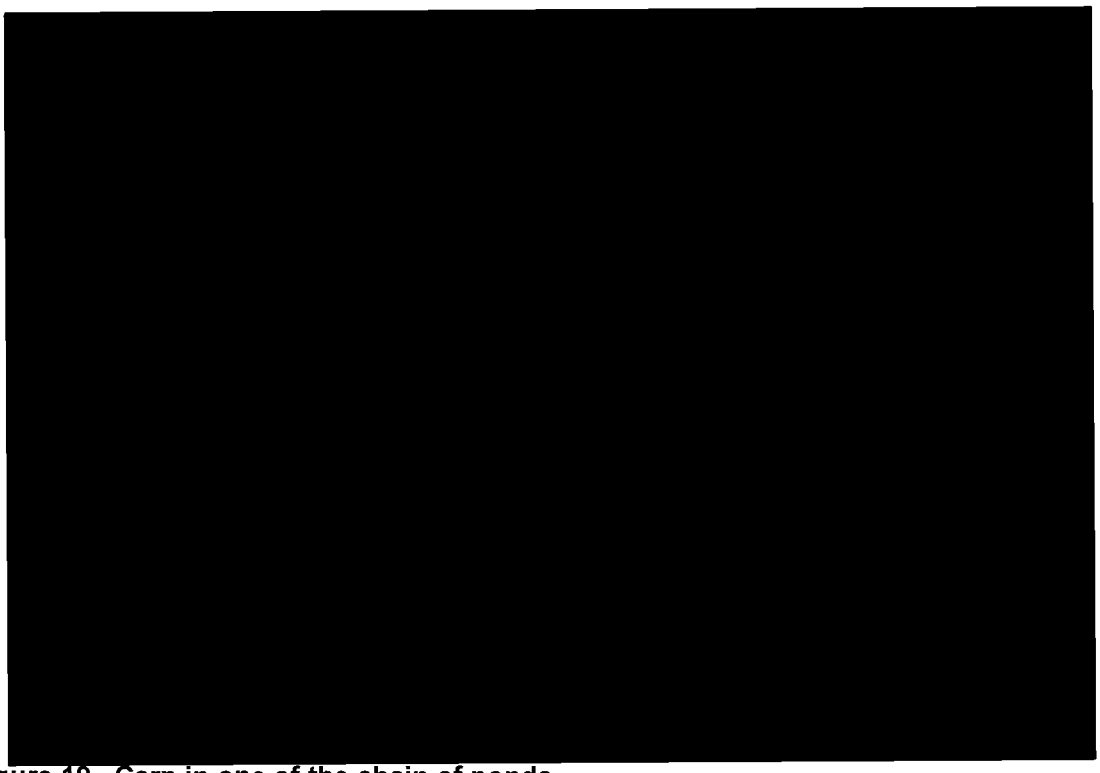

Figure 19. Carp in one of the chain of ponds.

Currently carp are a major beneficiary of the deep pools. It is hoped that native aquatic fauna can be re-established in the longer term.

Assessment of risk to the aquatic habitat from bore irrigation on New Haven and Gunnadoo

The pond depth currently appears reasonably stable with small outflows evident.

As there is minimal flow upstream it is likely that the flow is generated from aquifers on the alluvial lands. There is potential that bore pumping intercepts flows towards the river.

However the uranium measurements suggest that the inflows are not sufficient to significantly dilute this tracer.

Therefore the issue is

'Does the bore pumping significantly change the water depth in the ponds'?

A series of water level markers have been installed to assess change in water depth. In the past 3 weeks of July, 2019, the height of water in the chain of ponds has increased by around 5 mm. This is based on pins installed in the second week of July.

That is, at this stage, the pumping is NOT impacting on water level in the pond immediately adjacent to [redacted] In fact, the water surface elevating is increasing. It is noted that irrigation requirement is less in July than in summer.

However, the results are suggesting that there is little if any negative impact of irrigation on water depth in the chain of ponds.

Therefore, there is little evidence of connectivity between the Gunnadoo bores and the Cockburn river.

Importantly, the irrigation activities undertaken by the [redacted]Family are NOT reducing habitat in the Cockburn River.

Proposed actions

Depending on DoI Water responses it is proposed that more intensive monitoring of water levels in the chain of ponds system be undertaken for as long as both the drought and New Haven/Gunnadoo irrigation continues

- Continue monitoring water level in at least 4 ponds.
- Identify inflow point at the commencement of the floodplain (upstream of the Gunnadoo Property)
- Identify if there is any flow. Take photos.
- Identify outflow points from each of the ponds.
- Measure the width of the outflow. RECORD the date. Take photos.

6. THE ISSUES AND WHAT CAN BE DONE

DoI Water is seeking to minimise environmental harm by reducing the abstraction of water from catchment rivers.

A key reason for this is that supplying communities that may commence to run out of water is a major issue. There is also the issue of indigenous peoples' access to water and associated food resources.

Conversely the [redacted]family have invested heavily in production of perennial lucerne. As part of this, the family has installed over 140 ha of subsurface irrigation. This is more efficient than spray irrigation as soil evaporation is reduced to losses from rainfall. Direct loss during the spray simply does not occur.

The 'proof' of the system efficiency is in the very high lucerne yield/mm of irrigation water.

Proposed actions

1. **Gradually step down the volume of water extracted.**

For example only use 75% of the pump time used in the last year for the remainder of 2019. If the drought is still continuing,

As part of this the DPI should be consulted about critical moisture stages for lucerne. That is, concentrate the watering during moisture sensitive growth phases.

Also look to shorten the irrigation duration so that the drainage below the root zone is minimised.

2. **Use the height gauges to identify any 'acceleration' in water level fall in the ponds.**

It is critical that the water levels be recorded on at least a monthly basis.

3. **Record the width of outflows from at least 4 ponds. Also record any flow in the Cockburn River upslope of the floodplain.**

   It is critical that the incidence of outflows be recorded on at least a monthly basis. Measure presence/absence and the width of the outflow at the same point each month.

4. **Use the uranium as a tracer to identify changes in the water sources within the lower Cockburn River.**

   This should include measurement at the inflow point to the floodplain and outflows at least 4 of the inline ponds.

   The key aim of this submission is to demonstrate that the subsurface irrigation of perennial lucerne can continue without significantly impacting of Cockburn River flows. On the basis of evidence collected so far, no impacts are anticipated on the aquatic habitat within the 'chain of ponds' system along the lower Cockburn River.

Options for the [redacted] Family

1. Offer to only irrigate using the subsurface system where possible.

2. Offer to undertake monitoring as set out above.

COCKBURN RIVER PLAN

Introduction

This River Plan was undertaken in response to the Cockburn Valley Water User's request for advice. The plan outlines a number of areas along the river which require structural works and/or revegetation. Details are provided as to the type and placement of bed and bank erosion control works, ongoing management and revegetation. Further information on plan aims, river processes and problems, recommendations, ongoing management, permit requirements and funding is provided in the **River Planning Resource Book**.

Plan Location

This plan extends from Ballantynes Bridge, upstream of Kootingal, to the junction of the Cockburn and Peel Rivers between Tamworth and Nemingha. This represents approximately 19.5 kilometres of river length.

River Condition and Characteristics

The first 1.5 kilometres of river covered by the plan is relatively stable. Through this area, there is little floodplain development, with the river being confined within a narrow valley. Rock outcrops are evident both within the bed and banks of the river, providing effective natural controls on river behaviour. Vegetation along this section of river is patchy. Fencing is recommended to allow natural regeneration of riparian vegetation. Additional revegetation efforts are also encouraged.

Approximately 1.5 kilometres downstream, the valley flattens out into continuous floodplain ranging between 400 and 800m in width. Natural bedrock controls are few, although there are occurrences of large woody debris (LWD) in some locations assisting bed and bank stability. Bed lowering and associated bank erosion is evident throughout the river, with variations in depth and severity. Deep pools (>1.5m) are rare.

The most stable reaches of the river occur in areas where the river exhibits the following characteristics:

- presence of dense vegetation on both banks;
- contains natural (or artificial) bed controls;
- has relatively low slope.

These areas include the following sections of river:

- from the bed control structure on "Kaih" to Site 5;
- from "Kaih"/"Chelsea Farm" boundary to Site 7;
- Site 11 to Site 13;
- Site 14 to Site 15;
- Site 15 to Site 16;
- from the bed control structure on "Newhaven Park" to Site 17.

The river is extensively degraded below Site 17 until its confluence with the Peel. Problems include:

- bed lowering (up to 4 metres in places);
- extensive bank slumping;
- bank erosion due to overbank flows;
- lack of significant pools;
- vegetation decline;
- inadequate amount of large woody debris within the channel;
- willow infestation;
- noxious weeds and feral pests.

Recommendations

Recommendations applicable to the **entire length** of the Cockburn River include:

- encouraging regeneration of native trees and shrubs on lower and upper banks;
- maintenance of buffer zones to reduce incidence of bank erosion resulting from overbank flows
- retention of large woody debris (LWD) within the channel;
- noxious weed and feral pest control;
- stock management to reduce effects of overgrazing.

(See below for recommendations on individual sites.)

Site Priorities

Setting priorities for sites for rehabilitation sites is largely up to the Cockburn Water Users Group. It should be noted that the Department of Land & Water Conservation implements a geo-ecological assessment of all funding applications received for stream restoration works. Under this assessment method, applications that aim to protect sections of river which are in good condition will be ranked above those that address severely degraded reaches.

The geo-ecological assessment is carried out together with consideration of other issues including:

- whether works are technically appropriate;
- degree of risk;
- future benefits of works:
- commitment to maintenance and ongoing management;
- accuracy of costs/quotes;
- revegetation plan;
- group and other contributions;
- community benefit;
- development of local knowledge and skills;
- planning;
- previous funding and track record.

Permits and Authorities

Depending on the nature of rehabilitation activities, permits may be required under the following Acts of Parliament:

- Rivers and Foreshores Improvement Act;
- Threatened Species Conservation Act;
- Fisheries Management Act;

Further information on permit requirements is contained within the **River Planning Resource Book**. Please contact the local office of the Department of Land & Water Conservation and NSW Fisheries to arrange permits and authorities prior to the implementation of river restoration activities.

SITE INFORMATION (REFER TO AERIAL PHOTOS)

The following site information details the main problem occurring at individual sites and provides recommendations for rehabilitation. Site numbers refer to those on the aerial photograph enlargements. The Riverwise notes contained within the Appendix of the **River Planning Resource Book** provide additional information on recommendations.

PHOTO 1

Site 1 & 2: Bed lowering/Bank Erosion

[redacted]

This area is badly degraded and requires installation of a rock bed control structure below Site 2. Realignment of these bends should also be carried out, using available timber to protect the toe of eroded banks. Revegetation is also important.

Site 3: Bank Erosion/Vegetation Management

[redacted]

The build of river-oak regrowth on the in-stream gravel deposit is exacerbating bank erosion at this site. This requires selective clearing, with larger timber to be buried in the toe of the eroded bank and revegetated. Large logs and/or rock toe protection would enhance stabilisation of this site.

A rock outcrop at the lower end of this eroded section is acting as a natural control however it is not clear whether it extends across the bed of the river at this location.

Site 4: Vegetation Management

[redacted]

This area has suffered extensive erosion previously and is now starting to stabilise. Revegetation of this area should be encouraged.

Car bodies have been placed as bank protection below Site 4. They have assisted in stabilising this bank, however they are exposed posing a threat to public safety. The river is quite steep between this area and the bed control structure. The bed control structure appears to be performing well, however the steepness of the river prevents ponding of water to a significant depth or distance upstream. Downstream of this structure the river channel is quite flat and narrow (<15m) with reasonably good vegetation on both banks.

Site 5: Bank Erosion

[redacted]

Bank erosion at Site 5 is best treated with logs and/or rock, placed to protect the toe. Revegetation of the eroded area should be encouraged.

Site 6: Bed Lowering/Bank Erosion

[redacted]

Bed lowering at this location appears to be the main cause of bank erosion along the left-hand bank (LHB). A bed control structure below this bank erosion is recommended. The cross section of the river at this location is suitable for the construction of either a rock or log bed control structure.

Site 7: Bank Erosion [redacted]

Bank erosion at this location is similar to that at Site 5. It requires either rock or log toe protection together with revegetation.

Between Sites 7 & 8, the river channel is relatively wide and has little riparian vegetation. A history of large-scale gravel extraction is evident along this reach of river.

Site 8: Bank Erosion

Bank erosion at this location is relatively minor and would be best treated through revegetation and livestock control.

Site 9: Bank Erosion [redacted]

Bank erosion along the right hand bank (RHB) at this location is severe and requires toe protection with large rock. A bed control structure is also recommended, however the cross section of the river at this area would make this difficult and expensive to construct.

Site 10: Vegetation Management

At the time of inspection, this are was heavily grazed, restricting any natural regeneration of riparian vegetation. Controlled grazing would allow regeneration while still allowing some weed control and utilisation of pasture.

Site 11: Bank Erosion [redacted]

Bank erosion at this location is best treated by placing large logs against the toe of the eroded bank followed by revegetation.

The river below Site 11 has a relatively narrow primary channel and is reasonably well vegetated. Large woody debris is present within the channel resulting in pools, bank protection and energy dissipation during flood events.

The bed control structure below the bridge causes ponding for approximately 50 metres upstream. The pool in this location is up to 1.5 metres deep in places. There is evidence of bank wash on the RHB adjacent to the bed control structure that requires a small amount of additional rock.

There is along pool below the bed control structure that extends around to Site 14. Large woody debris is present within the channel that should not be removed.

Sites 12 & 13: Vegetation Management [redacted]

Removal of willows that are growing in-stream or on inside bends through this area is recommended. Willows growing on outside bends are best retained, although lopping of larger branches is recommended.

Site 14: Bank Erosion

[redacted]

Bank erosion at this location is exacerbated by the build-up of willows within the river channel. An island has formed in the middle of the river, resulting in flows being forced against the RHB. Realignment of the channel is recommended, followed by the installation of groynes to promote sedimentation and regeneration of riparian vegetation along the RHB.

The area between Sites 14 and 15 is relatively stable with reasonably good vegetation and occasional pools. There is evidence of an old channel upstream of Site 15 that has become stabilised with vegetation.

PHOTO 2

Site 15: Bed Lowering/Bank Erosion

[redacted]

Severe bank erosion along the LHB at this site is ideally treated with a bed control structure downstream of the erosion. However, the cross section of the river channel at this location makes it economically prohibitive to construct such a structure from rock. A log structure is a possibility, but will also require bank toe protection of either logs or rock.

There is a rock outcrop immediately upstream of the badly eroded area, which is currently preventing upstream migration of headward erosion.

The section of river between Sites 15 & 16 is relatively straight and low in slope with various densities of vegetation. It has a well-developed pool/riffle sequence, although pools are quite shallow, and is relatively stable.

Site 16: Bed Lowering/Bank Erosion

[redacted]

Severe bed lowering along this reach of river has resulted in bank erosion along the LHB, placing residential property at risk. Some rock protection work has been carried out at this site, but more is required. A bed control structure is also required downstream of this eroded bend to prevent further undermining of rock protection work. Due to site constraints, a log bed control structure may have to be considered, rather than a rock structure.

The river drops quite steeply from Site 16 to the downstream bed control structure. Within this area, granite is exposed in the bed and banks, providing a natural control. There is a deep pool below this granite outcrop. Below the bed control structure, the river is relatively stable with various densities of vegetation. The RHB is partly composed of rocky material, preventing lateral movement of the river in this location.

Site 17: Bank Erosion

[redacted]

Bank erosion at this location requires toe protection with logs and/or large rock followed by revegetation.

Site 18: Bank Erosion/Vegetation Management

[redacted]

Erosion along the LHB at this location has been previously treated by realignment followed by revegetation with poplars. Some erosion is still evident and is best treated by partial removal of river oaks from the gravel deposit on the inside of the bend and placement of large logs along the toe of the LHB.

Realignment of the river has been carried out previously downstream of this site. It has stabilised well since being revegetated. This area of river is quite steep with several riffles at short intervals and no significant pools.

Site 19: Vegetation Management

[redacted]

This area requires removal of in-stream willow regrowth, which is placing pressure on the RHB.

Site 20: Bank Erosion

[redacted]

Bank erosion at this location can be treated with placement/realignment of logs along the toe of the eroding bank.

There is a large, deep pool below this bend followed by a series of rapids/riffles. There is evidence of the old river channel along the LHB, which has now become stabilised with vegetation.

Site 21: Vegetation Management/Bank Erosion

[redacted]

This area of river is obstructed with willows and some river oaks, resulting in a small amount of bank erosion. The area needs to be cleared of in-stream willows together with channel realignment. Care must be taken to ensure upstream riffles are not disturbed as this may jeopardise the integrity of the upstream pool.

Site 22: Vegetation Management

[redacted]

In-stream willow regrowth requires removal at this location.

Sites 23 & 24: Bed Lowering/Bank Erosion

[redacted]

Bed lowering through this section of river has resulted in bank erosion. This has been enhanced by in-stream river oak regrowth at Site 23, which requires partial removal. A series of log bed control structures together with log toe protection and revegetation of eroded banks is also recommended.

Sites 25 & 26: Bed Lowering/Bank Erosion

[redacted]

As for Sites 23 & 24, a series of log bed control structures is recommended for this section of river and should be combined with log alignment, revegetation and livestock control. Bend realignment and protection of eroded banks with in-stream gravel and vegetation has been carried out at this location previously with minimal success. There is also a large amount of Green Cestrum in this area. This plant is extremely toxic to stock and is a W2 noxious weed, which must be fully and continually suppressed and destroyed.

Site 27 & 28: Bed Lowering/Bank Erosion

[redacted]

Severe bed lowering is evident along this reach of river. Gravel seams are currently exposed up to 3 metres above current bed level. There are some good sites for construction of a rock bed control structure at this location.

Regeneration of riparian vegetation along this section of river is being severely impeded by grazing practices. Controlled grazing is recommended to enhance natural stabilisation of riverbanks.

Site 29 & 30: Bed Lowering/Bank Erosion

[redacted]

Bed lowering and bank erosion are similarly evident along this section of river. Construction of a log bed control structure would assist in bank stability, as would willow removals and log toe protection.

Below this area the river takes a left-hand turn at a rocky ridge which is forming both a natural bed and bank control.

Sites 31, 32 & 33: Bed Lowering/Bank Erosion

[redacted]

The river becomes quite steep through this area, with the entire reach being composed of riffles and glides. Bed and bank erosion is severe. Some realignment work has been carried out in this area but further work is required. Due to the steepness of the channel at this location, bed control structures are recommended, together with revegetation and log alignment. Bed control structures in this area can be either a series of log weirs or rock structures. The main constraint in constructing these structures is keying them into the steep and eroded LHB.

Site 34: Bed Lowering/Bank Erosion

[redacted]

Bed lowering in this location has resulted in severe bank erosion. Upgrading of the bed control structure downstream at Site 35 will assist in stabilisation of the bank at this location. Rock and/or log toe protection is also recommended.

Site 35, 36 & 37: Vegetation Management & Bank Erosion

[redacted]

The bed control structure at Site 35 requires some renovation. Sediment is collecting on the downstream side of the structure and requires removal to prevent diversion of flow into adjacent banks. Upgrading of the bed control structure will allow ponding of water up to Site 34 assisting bank stabilisation at that location.

Log realignment and revegetation is recommended to treat bank erosion downstream of the bed control structure. Bed lowering along this reach may be treated by the installation of log bed control structures to assist in restoration of the pool/riffle sequence.

PHOTO 3

Sites 38 & 39: Bed Lowering/Bank Erosion

[redacted]

Bank erosion at both these sites is best treated with the installation of a log bed control structure immediately downstream of Site 39. Rock revetment, log alignment and revegetation will further assist stabilisation of eroded banks.

Site 40: Bed Lowering/Bank Erosion

[redacted]

Bank erosion at this location can be treated by some channel realignment, removal of in-stream regrowth and construction of a log bed control structure below the eroded bend.

Site 41: Bank Erosion

[redacted]

Realignment of fallen timber and revegetation of disturbed areas can treat bank erosion at this site.

Site 42: Bank Erosion

[redacted]

Bank erosion at this location has recently received treatment. The downstream bed control structure should assist stabilisation at this location. Realignment and revegetation at this site has been carried out. A drop structure to allow entry of overbank flows from a road culvert requires installation to prevent headward erosion of paddock gullies.

Site 43: Bank Erosion/Vegetation Management

[redacted]

The removal of in-stream willow and river oak regrowth, log realignment and revegetation will assist in the stabilisation of bank erosion at this location.

Site 44, 45 & 46: Bed Lowering/Bank Erosion & Vegetation Management

[redacted]

Bank erosion at these sites is primarily a result of bed lowering. A log bed control structure located between Sites 44 and 45 would assist bank erosion at Site 44, together with revegetation and log alignment. Site 45 requires partial removal of in-stream willow and river-oak regrowth. Site 46 is most effectively treated with rock and/or log revetment and vegetation.

Site 47: Bed Lowering/Bank Erosion

[redacted]

Bank erosion at this location is severe. The lower part of this bend has previously been treated with mesh fencing with some degree of success, however vegetation is sparse. There is currently a small weir (<300mm) at the lower end of this bend, which is preventing further bed lowering at Site 47. Upgrading of this weir to a rock bed control structure would further assist stabilisation of the bank in this location.

Sites 48 & 49: Bank Erosion

[redacted]

Bank erosion at Site 48 is relatively minor and is best treated by realigning logs along the toe of the bank, followed by revegetation. Site 49 requires some channel realignment, followed by protection of the toe of the bank with large rock. The area then requires revegetation. A natural rock bar immediately below Site 49 is providing a natural bed control.

Sites 50 & 51: Vegetation Management

[redacted]

Regrowth of willows and river oaks on gravel and sand deposits located on inside bends require removal.

Site 52: Bed Lowering/Bank Erosion

[redacted]

Bank erosion at this location is severe. Log bed control structures are recommended together with rock revetment along the toe of the bank.

Sites 53 & 55: Bed Lowering/Bank Erosion

[redacted]

Both bed lowering and bank erosion along this reach of river is severe. Site constraints make it difficult for construction of a bed control structure. A small weir at the junction of the Peel and Cockburn Rivers is currently performing as a bed control structure and should be maintained. Bank erosion at these sites is best treated with large rock, placed along the toe of eroded banks.

Sites 54 & 56: Vegetation Management

[redacted]

In-stream willows require removal at these sites. Older willows assisting in bank stabilisation should be lopped to prevent branches falling into the primary channel.

[redacted]

[redacted]

Department of Land & Water Conservation

September 1999

Peel Valley Water Users Association Inc

[redacted]

Peel Valley Water Users Association

Draft Regional Water Strategy

Namoi: shortlisted Actions – Consultation Paper

Submission 25.9.2022

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Summary:

The Peel Valley Water Users Association is a non-aligned entity representing the interests of irrigation licence holders in the Peel Valley. The Peel Valley is a comparatively small (but highly productive) valley located in the district surrounding Tamworth.

Irrigation in the Peel Valley is used to support a variety of agricultural businesses – principally a fodder industry based on high quality lucerne hay and other fodder products, a long-established dairy industry, a burgeoning equine industry, a large and expanding poultry industry, and fodder production for various livestock and stud stock enterprises. Intensive irrigation enterprises like turf production which require security of water supply, are also present in the region. Commercial businesses in the Tamworth area provide services to, and are dependent on the irrigation industry, particularly during dry times.

We are grateful for this opportunity to comment on the second draft of the Namoi Regional Water Strategy, and we recognise that the strategy team has done a substantial amount of work since the first version of the draft strategy was released in March 2021. We offer the following contribution as a means of providing a customers' view on the draft strategy, to the extent that it affects the Peel Valley. We have generally restricted our comments to the Peel water systems and the Tamworth Regional Council water supply questions and our other comments are general in nature.

NSW government policy is that the Dungowan Dam will be built and the Draft Regional Strategy is based around this premise. If some change in Federal Government funding eventuates, the Document and parts of the Strategy may need to be revised to reconsider the priorities and the options.

The Draft Strategy Document discusses the option for improving Tamworth city's water supply in some detail. Our response to these option will be presented in the latter section of Response to the List of Proposed actions. We believe that any option which does not adequately address the precarious nature of supplying water from only one dam to the city, will not be adequate. We oppose absolutely, the suggestion that the answer for Tamworth city's water supply lies in increasing the reserve in Chaffey Dam at the expense of the General Security licence holders.

We believe that the Peel alluvium needs to be better understood and would support options to increase the knowledge of this system. It would be premature to make any substantive changes to the access rules for the alluvial systems before these studies have been undertaken.

Peel Regulated water licences total 30335ML whilst the Long Term Annual Average Extraction Limit is only 6100ML. This would appear to present a risk to the system with the potential for these licences to be activated and further extraction to take place. In practice, we believe that this risk is very small because of the geography and demographic changes that have occurred in the valley. We would recommend that there be a series of trigger points identified which would then lead to further reviews and actions if necessary.

Conversion of General Security water to High Security water is a proposal that we think needs much further work. The rationale for this proposal in the Peel valley was not adequately discussed and it was included as addition to one of the infrastructure options for Tamworth's water supply. The impact on General security water users was not clear.

We support the improvement of aboriginal access to water and involvement in the management of the environmental water in the Peel Valley. The existing structures and committees seem to be

unsuitable for aboriginal access and we would support any improvements that can be found. We think that the stakeholders should all be given consideration in the process and that any one group should not be disadvantaged by attempts to accommodate another.

Environmental issues in the Peel have been given high priority, especially with the environmental contingency allowance held in Chaffey Dam. Whilst we support the fact that we want the rivers to be able to continue to deliver environmental benefits to the community, we would welcome further work on whether that is best served by continuous releases from the Dams. In this instance we support further work and research on the management of the environmental water.

Response to List of Proposed Actions.

In this list of responses we have only picked out those actions that we believe may have an impact on the Peel Valley Water Users Association Members

Priority 1: Supporting the long-term water needs of Tamworth and other towns in the region.

Proposed Action 1.1: Confirm the level of water security needed to support large regional towns.

We support this idea but warn that there may be a wide variation between what is the currently the case in different towns. Existing infrastructure limitations and town histories may mean that there is a range of water security risks being accepted by differing communities. We think this will need to be done on a place by place basis.

Priority Action 1.2; Improve drought management planning for towns.

Agreed.

Proposed Action 1.3: Adopt a stronger focus on water efficiency and demand management for towns.
We support the ongoing measures to restrict water usage during dry periods to prolong water supplies.

Using schemes to supplement reticulated water supplies with house tanks, grey water systems and water efficiency measure make good sense. Improving the reticulation system with investment in leaks, metering, stormwater recycling etc are also supported.

We note the comment made “We heard strong support for water conservation by communities and businesses, and across government. These measures include……using price as a signal to reduce water demand for industrial use”.

We understand that water use by large industrial water users in Tamworth accounts for around 40% of Tamworth’s total water consumption so we query whether this measure will be supported.

Proposed action 1.4: Progress advanced water treatment facilities for industry reliant on town water supplies
This section contains some general statements that need further explanation. For example:

Most of the large industrial water user businesses in Tamworth have already invested heavily in water saving and re-use practices, and therefore any further water treatment processes may result in only incremental gains, at substantial costs. The strategy should provide some detail of the measures proposed and their benefit /cost analysis to give a sense of whether these measures should be funded.

In this section, the considerable rate of growth in high water usage meat processing facilities is again justified based on increased employment, but a more detailed analysis of these industries is warranted.

Specifically, we support the proposal to develop advanced waste water treatment as it might offer the potential to supply some of the water needed for future growth, but a detailed assessment of the cost and the funding of the proposed facility would give a better understanding of the benefit and ramifications.

Proposed action 1.5: **Reduce uncertainty in groundwater security for regional towns.**
This proposed action highlights the flaw with having a "one size fits all" strategy to cater for the combined Namoi Valley and the Peel Valley. This proposed action has already been discounted (on page 26) for Tamworth (in the Peel Valley) because the groundwater in both the alluvial and fractured rock water sources is not sufficiently reliable to provide a sustainable additional town water supply.

The strategy document should be amended to reflect the fact that while this proposed action may be suitable in some parts of the Namoi Valley, it is not applicable to Tamworth.

Proposed action 1.6: Plan for the next long term water supply augmentation as Tamworth grows.
This proposed action assumes that the proposed Dungowan Dam will be built, and that may be a rather large assumption. If there is a decision to delay or discontinue the dam construction, these options may need to be reconsidered and reprioritised.

(i) Additional water treatment facilities.
We think that this option is a fundamentally good idea but we think that it is really one for Tamworth Regional Council to consider. There are probably some different options grouped together here which would have impacts at differing parts of the supply network. This option shifts the responsibility of funding the treatment facilities back to Tamworth Regional Council and without external funding, that may be problematic as there may be limited ability to recover the costs from the end users. Obviously, we think that any recycling of water or efficiency measure will reduce the demand and make any solution for Tamworth last longer.

(ii) Pipeline from Namoi Valley Dams to Tamworth with an increased storage reserve.
This is a proposed solution to the problem of Tamworth's water supply that relies on being able to reserve some 41GL of water in the dams (Keepit or Split Rock) to provide Tamworth with its water requirement. This pipeline construction, route and cost would need to be ascertained.

We think it is worth considering whether this option could be supplemented by considering a pipeline from the end of the Peel River back into Keepit Dam. The Peel is only 2.5km from the dam and, if constructed, would considerably offset the loss of access to water from the existing General Security Holders in the Namoi by providing an opportunity to replace the

reserve retained for Tamworth water supply. This would spread the impact across the regulated and unregulated water licence holders and mitigate the impact.

If this option is seen as a longer term arrangement, based on the presumption that the Dungowan Dam has been constructed, then the extra 41GL would seem like a large additional reserve.

However, if there is a change in the current construction plans for Dungowan, we think this option should be investigated as a matter of urgency.

(iii) Pipeline from the Manning Valley to Peel Valley

This option needs some further work to further understand the impacts it might have on the Manning Valley. From the Peel and Tamworth point of view, there is something about bringing water into the Murray Darling basin from outside the basin which would greatly simplify the water accounting issues as it would be outside the MDB cap and would provide a level of security to the town, however there is obviously going to be impacts from the Manning Valley which need some further assessment.

The proposed Barnard to Chaffey Dam transfer would average around 16GL per year which would service Tamworth's needs under current projections. The proposal indicated a pumping rate of 70ML/day into Chaffey Dam when it was below 90%.

In the detail of this option, there was mention of a 5GL high security licence being made available downstream of Tamworth in this option. Without a rationale for the licence and an assessment of its impact on the other General Security licences, we think this confuses the issue and should be removed from the next iteration of the document.

(iv) Increase the water reserved for Tamworth in Chaffey Dam.

This option which proposes to reserve 42GL of water in Chaffey Dam, would have an extremely detrimental impact on the General Security water users, without providing the water users of Tamworth city security in extreme droughts.

The water users remain totally opposed to this option.

Some of the commentary in this option seems incorrect. The implication that irrigators would use high flow opportunities to store water and reuse it is not feasible in the Peel catchment. The topography and soil types are not well suited to off river storages and the high flows are nearly always associated with very high moisture conditions in the local soils after significant rainfall. From an engineering point of view, the pump station and size needed to capture a significant volume of water during a high flow event would have to be larger than further downstream because of the shorter duration of any high flow event. As well there would be licencing restriction on any structure which was proposed to be constructed on the floodplain. In summary this idea is not practical.

The other figures which attempted to show the impact on the General Security water users listed the allocation at the end of the year as a measure of how much they had been impacted. This measure is not very applicable to our industry as the water allocation cannot be carried over. In fact, it is the water allocation at the beginning of the year which is important as General Security users plan their year's activities. The level of initial allocation and the time during the year when the allocation may be increased as water use is further

assessed are the real measures and these would seem to be even more severely impacted than final allocation.

We also think that experience has shown that this option may still leave Tamworth city vulnerable to an extreme drought in the catchment of the Dam, and, as a result does not meet the fundamental aim to reduce the risk to the city of running out of water. The options put forward show that the reduction in risk is only by a factor of 2 and subject to the initial studies around what a suitable level of water security should be for the city, we do not believe this option would provide that security.

Proposed Action 1.7: addressing water related skills shortages in small councils
This action is supported.

Priority 2: Supporting a growing regional community under a more variable and uncertain future climate.

Proposed Action 2.1: Invest in continuous improvement to surface modelling in the Namoi region.
We support the continuous improvement of the river system models in the region.

Proposed Action 2.2: Accelerate investment in groundwater modelling in the Namoi region.
We support the further development of models for the groundwater in the region.

Proposed Action 2.3: Improve the participation of Aboriginal people in water management in the Namoi region.
We support this proposed action but would encourage the Department to make sure that it retains an inclusive approach so that Aboriginal involvement is improved but not at the expense of other stakeholders.

Proposed Action 2.4: Improve public access to climate information and water availability forecasts.
We support this prosed action and especially we would support greater clarity around the calculation of the Available Water Determinations.

Proposed Action 2.5: Undertake research to inform reviews of groundwater extraction and condition limits.
We support this measure but reinforce that we would only support changes to the extraction and condition limits if those changes are clearly supported by the research and have been widely consulted with the affected users.

Proposed Action 2.6: Review the water allocation rules for licences in the Peel Alluvium.
We believe this proposed action needs to be very carefully undertaken. Any changes to the access rules of the licences will have an impact on the irrigation industry and the natural ability of the alluvium to be a source of water in drier times, only to be replenished in the wetter times has to be considered. The strategy refers to a high level of connectivity between the alluvial and surface water sources but it is the experience of the water users that this varies enormously and some areas of the valley are not highly connected. We would encourage the Department to review these lived experiences as well. Obviously, further studies on the level of connection between the water sources need to be undertaken and it would be inappropriate for any decisions regarding access

conditions to be made until those results are available and proper consultation with affected landholders has been undertaken.

Proposed Action 2.7: Understand risks associated with potential future activation of underused licences in the Peel.
The water users are well aware of the disconnect between the licenced allocation in the Peel regulated water source and the Long Term Average Annual Extraction Limit (LTAAEL). However we do not think this is an immediate problem for several reasons. Firstly, much of the unused allocation is held by existing irrigators. As a method of mitigating the risk of low levels of allocation, irrigators hold surplus water licence so that even if the announced initial allocation is small, they still hold enough water to continue a basic level of enterprise for the year. Secondly, trading of water allocation has been in place for a number of years so those enterprises which have been wanting to expand have had the capacity to source water from the market and any huge increase in the water used in the Valley would have already been seen. Thirdly we understand that a large number of the small blocks which hold irrigation licences have changed hands to people who have bought into the area for the lifestyle but are not full time irrigation farmers and, as a result, the level of usage on many previously active licences has reduced.

For these reasons we consider that this risk remains small and that the best action for the Department would be to consider the level of usage at which some action may be necessary (trigger point) and then outline some potential measures that could be enacted.

We note that the current level of average usage is below the LTAAEL and that the level of usage has only rarely exceeded the LTAAEL in the last twenty years.

Proposed Action 2.8: Make provision for voluntary licence conversion.
We would be very concerned of the impact of this proposal on the General Security licence holders allocation. We can see some benefit for highly intensive agriculture or other industries which need a secure supply (turf farming, meat processing, orchards and permanent plantings such as nut trees) however there was very little detail on how this might apply in the Peel catchment in this Proposed Action. Other questions around the actual level of security that would be provided if the allocation of high security licences was increased would need to be addressed. The work outlined in the draft document was attributed to proposed licence conversions in the lower Namoi valley.

We remain unsure what impact of the creation of high security licences would be depending on where in the Valley these licences were positioned as it would seem that the practical aspects of delivering the water without losing too much into the dry river bed edges would be critical in times of dry conditions.

Any changes to licence conversion would require wide consultation with the community before it could be undertaken.

Proposed Action 2.9: Support the development of new water related aboriginal business opportunities in the Namoi region.
We support any program which aims to assist Aboriginal communities to navigate the numerous opportunities for government assistance. We believe these program should be based around need and should be part of an overall government effort to support the parts of our community which are the most disadvantaged.

Proposed Action 2.10: Improve outcomes for Aboriginal people through place based initiatives.
We support any program which aims to assist Aboriginal communities to navigate the numerous

opportunities for government assistance. We believe these programs should be based around need and should be part of an overall government effort to support the parts of our community which are the most disadvantaged.

However we would welcome some further clarity on the proposal to provide Aboriginal groups with cultural water access licences. If these are not considered to be part of the existing Environmental contingency Allowance, or water held by the Commonwealth Environmental Water Holder, we would need to understand from where that licence allocation would be sourced. We would not have any concerns if that water was to be purchased on the open market although the previous concern of whether licences may become activated could become a new concern if a large amount of water was purchased for this purpose.

We support the opportunity for Aboriginal people to be included in the discussions to provide clearer access to government owned land but, where local landholders are affected, we would ask that they be included in any of the discussions.

Proposed Action 2.11: Support increased investment and research into industry climate adaptation.
Supported depending on funding.

Proposed Action 2.12: Increase transparency in the management of groundwater resources in the Namoi region.
Supported.

Proposed Action 2.13: Investigate managed aquifer recharge in the Namoi region.
Whilst we support further investigation in some areas, we do not believe that this measure would be appropriate in the Peel River alluvium. This regional alluvium is characterised by narrow valleys and sloping basements from the East to the West and it has the general character of only modest yields for irrigation or town water supply usage. Recharge into the aquifer has not been demonstrated to our knowledge in the area and the Tamworth Regional Council has not been able to use the aquifers as a reliable water source during dry periods because of declining bore yields with ongoing dry times. It would seem very unlikely that there is a strong case for aquifer recharge in this area.

Proposed Action 2.14: Ensure the water management framework can support sustainable economic diversification and transitioning economies.
We support the idea that the government support local councils to ensure that their plans for new industries are matched by their ability to supply appropriate water security to the industries concerned. Talk of transitioning away from coal industries, whilst something that needs to be considered, is still many years away given the long life of the mines in the area.

Priority 3 - Improving the health and resilience of water dependant ecosystems

Proposed Action 3.1: Assess gaps in the flow regime that are preventing achievement of environmental watering objectives and identify cooperative actions to improve ecological outcomes.
We strongly object to the proposal to allow environmental water to be carried over to the following year in the Peel Valley. This runs across the principles of fairness in the way water is used in the Peel regulated system and means that the environmental water could be as much as 10GL at the start of the following year, or 10% of the Dam's capacity. Given that the allowable long term average

allocation extraction limit for the irrigation industry is only 6100ML we think this is quite inappropriate.

This allocation of all environmental water should be granted on the same basis as other General Security water licences and mimic the natural system. When the dam has sufficient capacity and there is the opportunity, the environmental water can be released to promote ecological values. When there is a dry time, just as in nature, the water is not available and the river runs at lower levels and occasionally, its tributaries and anabranches will cease to flow. This is how these environments were created in the first place.

The discussion centring round increasing the certainty and flexibility of environmental flows seems to be confused. We would support a clearer articulation of the environmental flow regimes which are seen as being natural and an explanation of how the management of the environmental water aims to achieve these flow regimes.

We would also support the improved planning of environmental water releases so that adverse outcomes to river banks, and the environment were avoided.

Proposed Action 3.2: Identify regionally significant riparian, wetland and floodplain areas to protect or rehabilitate:
Supported subject to the provision of adequate funding. Previous programs aimed at improving the condition of various reaches of the system have met with mixed success. We believe that any program needs to have clear aims and a limited scope in order to have some chance of success. Future work can build off that success.

Proposed Action 3.3: Mitigate the impacts of water infrastructure on native fish.
The concept of removing weirs and fish barriers to support the populations of local fish would need to balance any other consequence that might be detrimental from the modification of the infrastructure.

We support these measures generally. On the subject of fish screens, we believe that the small size and rapid flow in the Peel and Cockburn Rivers means that this measure in not needed in the Peel Valley. Any attempt to introduce across the board requirements for pumps to have fish screens is not appropriate nor necessary in the Peel Valley. We recommend having a minimum pump size requirement for consideration.

We support progressing the cold water pollution offtake investigation for Keepit Dam.

Proposed Action 3.4: Fully implement the NSW Floodplain Harvesting Program.
Supported.

Proposed Action 3.5: Remediate unapproved floodplain structures.
We would need more information of this measure to make a comment.

Proposed Action 3.6: Improve understanding of water use and water quality at priority locations in the Namoi region.
Supported.

18th September 2022

NATIONAL PARKS ASSOCIATION OF NSW
protecting nature through community action

Department of Primary Industries and Environment

DRAFT REGIONAL WATER STRATEGY NAMOI

The National Parks Association of NSW (NPA) appreciates the opportunity to comment on the draft regional water strategy, which was on public exhibition from Monday, 22 August until Sunday, 18 September 2022.

NPA's mission is to protect nature through community action. Our strengths include State-wide reach, deep local knowledge, evidence-based input to policy and planning processes, and over 65 years' commitment to advancing the NSW protected area network and its professional management. We also provide outstanding opportunities for experiencing and learning about nature through our unrivalled program of bushwalking, field surveys, bush regeneration and other outdoor activities.

To this regard the NPA believes it is important that the NSW Government protect and sustain healthy and resilient freshwater ecosystems and their associated biodiversity (flora and fauna). This requires actions to i) protect and sustain healthy and resilient freshwater ecosystems and their associated biodiversity (flora and fauna) and that ii) Natural flows and flow regimes must be protected and managed so that riverine connectivity and associated floodplains remains healthy from the source to the sea (or from sources to naturally terminal wetlands).

Consistent with the above, the NPA believes the draft strategy outlines some priorities that are not consistent with the sustainable management of our water resources. It would be improved if it recognised that:

- That priorities that support the long terms needs or regional towns whilst also supporting a growing regional community are not consistent with the use of a sustainable resource, and that other mechanisms such as land use planning and development control are effective mechanisms that must be integrated to ensure sustainability.

- Indeed the order of priorities outlined and proposed be made to be more consistent with the priorities and objects of the NSW *Water Management Act 2000*. Specifically, that is while addressing critical human needs is important, protecting the environmental health of water sources that underpins our dependency on water is the long term aim.

Specific Considerations

Priority 1: supporting the long-term water needs of Tamworth and other towns in the region

The NPA does not believe the Dungowan Dam and Pipeline Project should be a high priority commitment of the NSW Government. First, there is only conditional commitment contingent to an agreement by the Federal Government to fund 50% of the cost. The business case by Infrastructure Australia has recommended low funding priority. Second the NPA is concerned about an attempt to make a commitment for future development and emphasis on regional development growth in a drying climate. There is liability risk to Government to making statements to business enterprises that cannot be secured

in the long term. Finally this specific infrastructure projects seems to be making a commitment to upstream users at the expense of the lower catchment users that are already under stress and critical to maintain important connectivity with the wider water resource. Thus the proposal is simply unjust.

Putting more dams, that create large lakes that evaporate water is widely regarded as 'old thinking" and there are may programs across the world to remove such structures. This is because they are large evaporative lakes are inefficient and have real costs to downstream users.

The NPA believes gains can be made in efficiency of the uses rather than simply creating more volume capture. Thus we support:

- Action 1.3: Adopt a stronger focus on water efficiency and demand management for towns. This should be the top priority action for the Namoi RWS. All towns should have an Integrated Water Cycle Management Plan.
- Action 1.4: Progress advanced water treatment facilities for industries reliant on town water supplies. This should be the top priority for securing Tamworth water supply including as part of Action 1.6
- Actions 1.1, 1.2 and 1.7: Improve drought planning and staff resources for local government

Priority 2: support a growing regional community under a more variable and uncertain future climate

Regional growth should not be prioritised above sustainable use of the resource nor the environmental health of ecosystems that depends on these water sources AND indeed to reflect NSW water law the NPA believes a revised plan is needed that:

> **Supports** Actions 2.3, 2.9, 2.10: But notes that water and water places are crucial to Indigenous peoples' spirituality, well-being, livelihoods and identities, and their aspirations for self-determination span cultural, political, and socioeconomic dimensions. As such indigenous water injustice can still occur in that context despite acknowledgement through 'water colonialism' which the draft plan seems to entrench (Moggridge et al 2020, Hartwig et al 2022). DPIE needs to consider that it is relationships that become central, and the conversations centred on the array of social, economic, and cultural relationships that underpin First Nations peoples' identities is considered (Hartwig et al 2022).
>
> **Supports** Action 2.11: Consistent with the NPA believe that water is scarce resource. WE believe that improve industry efficiency should have top priority for improving water demand in agriculture
>
> **Supports** Actions 2.1, 2.2, 2.4, 2.5, 2.12 and give them high priority. Water resources are complex systems, which means complex interventions are characterized by uncertainty or unpredictability. Often these relationships are nonlinearity. Thus it may not be possible to directly correlate the specific outputs and inputs that have materially affected environmental, social, and economic outcomes. The more information we have and the better our models, the more likely we are to move to sustainable use.

Priority 3: Improving the health and resolve of water dependent ecosystems

Action 3.4 - Fully implement the NSW Floodplain Harvesting Program (the FPH policy). This cannot be a priority under *' Improving the health and resolve of water dependent ecosystems'* when there is no end of system flows. The rationale being:

- It is estimated that more than a quarter of all surface water used in the Namoi region comes from water diverted from the floodplain and intercepted before it enters rivers and creeks.
- It fails to recognise the significant long-term environmental damage that has occurred over time through the removal of 25% of all surface flows in the region. Indeed it fails to recognise the death/decline of significant wetlands as a result of this practice.

- As 'unspecified take' of water it must be modelled. There is serious concern about the methodology used under the FPH policy to assess entitlement in the unregulated water sources.
- There is no benefit to the environment unless the action being considered as a benefit to the environment. That being rivers must flow (what is the end of system flow?) and the environmental assets within the catchment are receiving sufficient water It seems the proposal is to monitor how much blood can be taken from the patient rather than the health of the actual patient.
- It is also critical to recognise that the connectivity flows to lagoons, billabongs and wetland areas in the Namoi need to be improved to support native fish breeding to help rebuild threatened species populations.

Thus the NPA believe s that achieving that the measuring environmental health of key natural ecosystems to determine environmental water requirements of the Namoi and Barwon-Darling/Baaka should have priority over simply 'modelling' take from floodplain harvesting.

The NPA notes that the NSW Government has an ad hoc approach to developing several strategies under the State Water Strategy. While the entire gamut of these plans is supported, they include an Aboriginal Water Strategy, the NSW Groundwater Strategy, the Town Water Risk Reduction Program and the Water Efficiency Framework and Program. These over-arching strategies should be in place before a subsidiary plan such as the Namoi is finalised to ensure consistency at the regional level.

References

Hartwig ,L D Francis Markham & Sue Jackson (2022) Benchmarking Indigenous water holdings in the Murray-Darling Basin: a crucial step towards developing water rights targets for Australia, *Australasian Journal of Water Resources*, 25:2, 98-110, DOI: 10.1080/13241583.2021.1970094

Moggridge BJ, Betterridge L, Thompson RM (2020) Integrating Aboriginal cultural values into water planning: a case study from New South Wales, Australia, *Australasian Journal of Environmental Management.*

NPA can be contacted through [redacted].

[redacted]

National Parks Association of NSW

protecting nature through community action

18 September 2022

NATIONAL PARKS ASSOCIATION OF NSW
protecting nature through community action

Armidale Branch
[redacted]

Regional Water Strategies team,
Department of Planning and Environment

sent by email to: regionalwater.strategies@dpie.nsw.gov.au

Dear Namoi regional water planners,

NAMOI REGIONAL WATER STRATEGY SHORT-LISTED OPTIONS

The Armidale Branch of the National Parks Association of NSW (NPA) appreciates the opportunity to comment on this second draft of the Namoi Regional Water Strategy

NPA's mission is to protect nature through community action. Our strengths include State-wide reach, deep local knowledge, evidence-based input to policy and planning processes, and over 65 years' commitment to advancing the NSW protected area network and its professional management. We also provide outstanding opportunities for experiencing and learning about nature through our unrivalled program of bushwalking, field surveys, bush regeneration and other outdoor activities.

Background

While the name of our organisation suggests a local interest in national parks, in practice Armidale Branch of NPA has a number of members in the Namoi region, and interests in the future of nature throughout the New England Northwest, adjoining and downstream areas including the Namoi. We are conscious of the importance of the headwaters as water sources on which ecosystems and people far away depend. We have long been concerned that much change in water management is needed to meet the needs of riverine, floodplain and groundwater-dependent ecosystems. While some welcome changes have been initiated, the general decline in river health shows the need for more actions that prioritise environmental needs.

General comments

We appreciate that this and other regional water strategies propose some actions that indicate some welcome changes in direction as well as recognition of the likely effects of climate change, however we are concerned that other proposed actions and recent government decisions (notably regarding floodplain harvesting) indicate unwillingness at the Ministerial level to move away from prioritising the wishes of irrigators and large industrial water users give environmental water needs the priority set down in the Water Management Act 2000. Strategic planning will be of little value if it produces little change in the processes that have most adverse environmental and downstream impacts. The draft Strategy recognises the need for connectivity with the Barwon without acknowledging the great reduction in social, ecological and economic benefits from water in downstream catchments that the current level of diversions is causing. While there is some consideration of the need to increase efficiency of water use, the Strategy focusses on maintaining and increasing benefits to people and businesses in the Namoi at the expense of other regions to east and west. Communities need to learn how to live within the environment's means. The continuing commitment to build Dungowan Dam is a gross waste of public funds that would be better spent largely on better management of natural resources (e.g. regenerative catchment management, riparian repair, removing barriers to fish passage) and partly on increasing efficiency of residential water use while providing Tamworth's enduring level of supply from Chaffey Dam which was enlarged at public expense for this purpose.

[redacted]

The full recovery of environmental water under the Basin Plan Sustainable Diversion Limit from NSW has still not been achieved. There remains a shortfall of 9.5 GL in the Namoi. It is imperative that high priority is given to complete NSW legal requirements under the Commonwealth *Water Act 2007*.

Specific issues

Armidale NPA is concerned by ongoing consideration of water diversion from the east which will have adverse impacts on ecosystems in and along the rivers from which water is diverted. We were alarmed to read that diversion from the Gara River was considered. The Consultation Paper's Attachment 2 discusses an "option" of diverting water from the Gara River in the Macleay catchment via Roumalla Creek in the Gwydir catchment and two pipelines into the Namoi catchment then calculates benefits to Namoi towns and agriculture without even mentioning that Gara River already struggles to supply the water demands of Guyra and Armidale, let alone mentioning that taking more water from this source will be at the expense of ecosystems in Oxley Wild Rivers National Park and the Macleay River. Why was public money spent playing with this idea? Were those involved hoping to create a war between Armidale and Tamworth? Just as well the option has been dropped.

The proposed diversion of water from the Barnard River in the Manning catchment should also be dropped not further investigated. We are greatly concerned that it will adversely affect ecosystems all the way down the Barnard including in Ben Halls Gap Nature Reserve and Curracabundi National Park. The fact that there has been a diversion to the Hunter in the past for a brief period does not indicate that ongoing diversions are acceptable.

We do support the proposal in Action 1.1 to change the guidelines for town water supply planning to work out what an 'enduring level of supply' might be and discuss this with communities. This should replace the 5:10:10 rule and stop town water planning being based on the highest past level of use which is unrealistic. We also support actions 1.2, 1.3, 1.4 and 1.7 including and the statements that more consideration should be given to reduction in demands for water from rivers and groundwater – reduction of demand should be a prerequisite for any State funding.

Armidale NPA has long been concerned for the conservation of the Pilliga forest. We oppose coal seam gas mining and the suggestion that water management associated with this is in any way sustainable. WE do not support any actions that allow or enable coals seam gas mining. We also oppose the alteration of water tables by coal mining and its impacts on groundwater. This mining should be ended in the short to medium term, not in the long term.

We appreciate Priority 3 improving the health and resilience of water dependent ecosystems and support actions 3.1, 3.2, 3.3, 3.5, 3.6 and 3.8

We strongly oppose the proposal to allow floodplain harvesting with the appallingly low end-of-system target of 300 Ml/day only when Menindee lakes are below 195 GL. No floodplain harvesting should be perbitted unless all of the water requirements of the Namoi and Barwon and Darling/Baaka have been or will be met – the Long Term Water Plans have a scientific basis and should be used to specify complex targets that must be met before harvesting is permitted. All unapproved FPH storages should be completely removed at the owners expense.

I can be contacted at [redacted]

[redacted]

[redacted]

[redacted]

Armidale Branch
National Parks Association of NSW
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[redacted]

14 September 2022

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Submission
Draft #2 Namoi Regional Water Strategy

Thank you for the opportunity to engage in the refinement of proposed actions for the Namoi Regional Water Strategy (RWS).

It is essential that the Namoi Regional Water Strategy focusses on options which are beneficial to the environment and the community, and takes a strategic whole-of-catchment perspective.

The priorities outlined in the short-listed actions consultation paper for the RWS do not meet the priorities and objects of the NSW Water Management Act 2000. The RWS process should reflect the relevant NSW law. While addressing critical human needs is the priority under drought conditions, protecting the environmental health and ecological integrity of water sources and their associated ecosystems is the main priority for the whole catchment and under all seasonal conditions.

It is recognised (ref.: DPIE-Water, March 2021. Draft Namoi Regional Water Strategy) that the overall ecosystem health of the Namoi region (including the Peel River) is poor, and the region's fish community is in very poor health. Therefore, it is critical that the highest priority actions should relate to restoring, repairing, and maintaining ecosystem function.

THE NAMOI REGIONAL WATER STRATEGY MUST BE BASED ON FINALISED OVERARCHING NSW WATER STRATEGIES

It is premature to plan or adopt a Regional Water Strategy when the NSW Government has not yet completed key overarching strategies under the State Water Strategy. These must guide the Regional Strategies. They include:

- Aboriginal Water Strategy;
- NSW Groundwater Strategy;
- Town Water Risk Reduction Program; and
- Water Efficiency Framework and Program.

These overarching strategies need to be completed and considered before the Namoi Regional Water Strategy can be finalised. In particular, it is essential that there should be full consultation with Aboriginal people before finalisation of the Aboriginal Water Strategy.

CATCHMENT AND CLIMATE CHANGE ISSUES

I am concerned that the Namoi RWS proposals for future development and its emphasis on regional development growth will concentrate water use and demand in the upper part of the Namoi catchment, in the Tamworth and Narrabri areas. This will be at the expense of the lower catchment areas already experiencing stress in a drying climate.

Climate change will seriously impact on current water policy and management arrangements. The environmental and cultural values of the Namoi region have been significantly impacted by poor water management practices in the past. These need to be ameliorated before the worse impacts of climate change occur.

CONNECTIVITY WITH THE BARWON-DARLING/BAAKA SYSTEMS

It is critical that the RWS recognises and incorporates the need for connectivity with the Barwon-Darling/Baaka systems. The Namoi contributes almost 25% of flows to Menindee Lakes, and therefore it is critical that there should be an adequate end-of-system flow target in the RWS. There is a need for rule changes to the Namoi WSPs to include floodplain harvesting regulation which will improve connectivity of flows to the Barwon-Darling/Baaka.

I support the RWS aim to *'do more to support the resilience of the region's ecosystems, improve overall waterway health and work out how we can best protect water-dependent species, communities and habitat.'* (DPE August 2022. Namoi shortlist options – Executive Summary p 9)

I also support *Action 3.7 Investigate ways to improve connectivity with the Barwon–Darling River on a multi-valley scale.*

The high level of connectivity of the Namoi River to the Barwon-Darling/Baaka must be recognised in the Namoi RWS with appropriate end-of-system target flows to manage in-valley access to floodplain harvesting and tributary inflows.

It is critical that connectivity flows to lagoons, billabongs and wetland areas in the Namoi are improved to support native fish breeding and to help rebuild threatened species populations.

GROUNDWATER

With reference to **Action 1.5**: *Reduce uncertainty in groundwater security for regional towns:*
This action must not result in increasing the dependency of towns on groundwater during drought and at other times. See comment on Actions 1.3 and 1.4 below.

The finalisation of the NSW Groundwater Strategy is critical to improve knowledge and management of groundwater sources.

MANAGED AQUIFER RECHARGE

The proposed *Action 2.13: Investigate managed aquifer recharge* aims to develop a regulatory framework for Managed Aquifer Recharge and provide guidance on the feasibility of locations in the Namoi region. The issue of costs and benefits, and who will pay is a consideration for this option.

Groundwater recharge is an important function of flood flows. This is critical in the Namoi with current high dependence on groundwater use. Achieving all environmental water requirements of the Namoi and Barwon-Darling/Baaka should have priority over floodplain harvesting.

This proposed action should be expanded to recognise the need for protection and restoration of existing recharge systems. The assessment of the environmental impact of works proposed for aquifer recharge must be a key focus of the framework.

STRONGER FOCUS ON WATER EFFICIENCY AND DEMAND MANAGEMENT

I support **Actions 1.3 and 1.4** *Adopt a stronger focus on water efficiency and demand management for towns and progress advanced water treatment facilities for industries reliant on town water supplies*

Priority must be given to actions and strategies which will reduce overall water demand and increase efficiency in its use.

Demand management must be a permanent component of town water management. Local Councils should be supported to develop and implement an Integrated Water Cycle Management Plan as agreed to under the 2004 National Water Initiative, and unless and until such a IWCMP is in place, there should not be access granted to other water sources.

The RWS should also include strategies for improved and sustainable economic diversification away from water intensive industries. The implementation of water recycling for industry and purified water recycling to better secure town water supply in the region must be given highest priority.

IMPROVING THE HEALTH AND RESILIENCE OF WATER-DEPENDENT ECOSYSTEMS

I support the actions which are aimed at improving the health and resilience of water-dependent ecosystems. These include *Actions 3.2, 3.3, 3.6: Protecting habitat and fish migration, improved monitoring.*

DUNGOWAN DAM IS NOT A CERTAINTY

The Dungowan Dam is far from certain, and it should not be included as a component of the draft RWS.

I do not agree with representing the Dungowan Dam and Pipeline Project in the RWS as if these were a commitment of the NSW Government. There is merely a conditional commitment, which is contingent on agreement by the Federal Government to fund 50% of the cost. This agreement is not in place and recent analysis of the project's final business

case by Infrastructure Australia has recommended only low funding priority. This project should not be in the RWS.

WATER PIPING PROPOSAL NOT SUPPORTED

I do not support proposals to pipe water from the Upper Namoi or Manning Valley to supply or augment town water. This would result in diverting water from other users and would have adverse impacts on the environment.

The water piping proposal should be deleted from the RWS.

FLOODPLAIN HARVESTING

I DO NOT SUPPORT **Action 3.4** - *Fully implement the NSW Floodplain Harvesting Program* (the FPH policy).

The NSW FPH policy as it currently stands would have a seriously adverse effect on the Namoi Region's water.

It is estimated that more than a quarter of all surface water used in the Namoi region comes from water diverted from the floodplain and intercepted before it can enter rivers and creeks.

I note that a new Source Model for the Namoi regulated river is being developed in the Namoi to account for water take from the floodplain. I am very concerned about the methodology used under the FPH policy to assess entitlement in the unregulated water sources.

I object to this action being regarded as a benefit to the environment. Any reduction in the historic take from the floodplain is not a "gift to the environment"; rather it is addressing decades of unfettered and unregulated use of water which has been taken from the environment.

UNAPPROVED FLOODPLAIN HARVESTING STRUCTURES

I refer to *Action 3.5 - Remediate unapproved floodplain structures*

All unapproved floodplain structures must be removed from the landscape to enable improved flows to significant wetlands, recharge of aquifers and to enhance and restore downstream connectivity. This must occur before floodplain harvesting works approvals and entitlements are finalised.

Unapproved works and structures should not be recognised in the development of the new Namoi Source Model. Remediation of these structures should not be considered. These structures must be completely removed.

Yours sincerely,

[signed]

[redacted]

[redacted]

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Friday 16 September 2022

Submission
Draft Namoi Regional Water Strategy shortlisted actions

Tamworth Water Security Alliance represents community groups and individuals who support cost effective, diverse, and sustainable water supply options for Tamworth Regional Council area.

We appreciate the level of community consultation conducted under the Regional Water Strategy development process and the opportunity to provide further recommendations for securing a sustainable and long-term water supply for Tamworth.

1. Dungowan Dam & Pipeline project

We do not agree with the stated position that Dungowan Dam is a commitment of the NSW Government. There has been no new funding committed to the project in the recent state budget and any likely funding is contingent on the Federal Government being prepared to cover 50% of the cost.

The recently released analysis of the project final business case by Infrastructure Australia has recommended that the project not be listed for priority by the Federal Government and that a comprehensive review of alternative options with improved cost benefit ratio be resubmitted.

We fully support this approach and recommend that the Namoi Regional Water Strategy take the same approach by prioritising a more cost effective and affordable suite of options, that combined, will provide long-term water security in a changing climate.

2. Water security for Tamworth

Considering that the NSW Government is prepared to provide $600 million towards securing Tamworth's water supply, we propose that the following projects be given high priority in the strategy implementation plan:

- Fund the repair of the existing Dungowan Dam
- Fund the second stage of the pipeline upgrade
- Fund the full industry water recycling program for abattoirs using town water supply
- Account for the savings made through current and future demand management and efficiency measures, and through the recycling and reuse of industrial water
- Add the volume of saved water to the Year 2 allocation for Tamworth water licence under the available water determination (AWD) process for Chaffey Dam.
- Decouple the inclusion of Dungowan Dam storage above 50% from the AWD
- Assess a range of scenarios for the use of the Chaffey Dam pipeline, including increased use during wet years.

3. Purified Water Recycling

Tamworth Water Security Alliance strongly supports the introduction of purified recycled water across all urban areas in the Namoi Valley. It is imperative that education and awareness programs are given high priority in the strategy implementation plan to commence as soon as possible.

This project should also include an analysis of opportunities for new spin-off industries to process wastewater by products and provide regional development under current and future climate constraints. Funding must be prioritised for:

- A mobile purified water recycling unit to tour regional communities as part of an education process so that people can sample the water.
- Research into the development of new industries using extracted nutrients such as phosphorous, and other by products from wastewater during the purified recycling process, as being adopted in Europe under advice from UNESCO in the '*Water Reuse Within a Circular Economy Context*' report.[1]

Tamworth Water Security Alliance looks forward to the release of the final Namoi Regional Water Strategy and implementation plan and trusts that the full range of options available to secure Tamworth water supply are afforded a high priority and funding for implementation in the immediate future.

Yours sincerely

[redacted]
On behalf of Tamworth Water Security Alliance

[1] https://unesdoc.unesco.org/ark:/48223/pf0000374715.locale=en

Date	First name	Last Name	Email address	Device Type	Address	Phone number	Do you identify as an Aboriginal person:
2022-09-18 10:33:41 +1000	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	Yes

Are you making this submission as an individual or as a representative of an organisation?	If making this submission as a representative of an organisation, who do you represent?	Do you agree that these are the priority water challenges for the Namoi region that we need to focus	Please outline what you see as the priority water challenges in this region over the next 20 – 40 years?	Proposed actions to support water needs of Tamworth and other towns	Do you have any comments on the proposed actions identified?	Supporting a growing regional community under a more variable and uncertain future climate	Do you have any comments on the proposed actions identified?
Individual							

Improving the health and resilience of water dependant ecosystems	Do you have any comments on the proposed actions identified?	Which actions should be implemented first and why?	I give my permission for mysubmission to bepublicly available on the NSW Department of Planningand	I would like my personal details to be kept confidential.	Would you like to be kept updated on progress on the development and implementation of the Namoi Regional Water	Please provide your details below. - Email address	Please provide your details below. - Name

Please provide your details below. - Address	Please provide your details below. - Contact phone number	How did you hear about the Public Exhibition of this strategy?	Do you agree that these are the priority water challenges for the Namoi region that we need to focus on?	Please outline what you see as the priority water challenges in this region over the next 20 – 40 years?	Proposed actions to support water needs of Tamworth and other towns
			Yes		{"Action 1.1 - Supporting the long-term water needs of Tamworth and other towns in the region":{"Do you support this action?":"No"},"Action 1.2 - Drought management planning for towns":{"Do you support this action?":"No"},"Action 1.3 - Stronger focus on water efficiency and demand management for towns":{"Do you support this action?":"No"},"Action 1.4 - Advanced water treatment facility for industries reliant on town water supplies":{"Do you support this action?":"No"},"Action 1.5 - Reduce uncertainty in groundwater security for regional towns":{"Do you support this action?":"No"},"Action 1.6 - Plan for the next long term water supply augmentation as Tamworth grows ":{"Do you support this action?":"No"},"Action 1.7 - Addressing water related skills shortages in small councils ":{"Do you support this action?":"No"}}

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Supporting a growing regional community under a more variable and uncertain future climate

{"Action 2.1 - Invest in continuous improvement to surface water system modelling in the Namoi region":{"Do you support this action?":"No"},"Action 2.2 - Accelerate investment in groundwater modelling in the Namoi region ":{"Do you support this action?":"No"},"Action 2.3 - Improve the participation of Aboriginal people in water management in the Namoi region":{"Do you support this action?":"No"},"Action 2.4 - Improve public access to climate information and water availability forecasts ":{"Do you support this action?":"No"},"Action 2.5 - Undertake research to inform reviews of groundwater extraction limits":{"Do you support this action?":"No"},"Action 2.6 - Review the water allocation rules for licences in the Peel alluvium":{"Do you support this action?":"No"},"Action 2.7 - Understand risks associated with potential future activation of underused licences in the Peel Valley":{"Do you support this action?":"No"},"Action 2.8 - Make provision for voluntary licence conversions":{"Do you support this action?":"No"},"Action 2.9 - Support the development of new Aboriginal business opportunities in the Namoi region":{"Do you support this action?":"No"},"Action 2.10 - Improve outcomes for Aboriginal people through place-based initiatives":{"Do you support this action?":"No"},"Action 2.11 - Support increased investment and research into industry climate adaptation":{"Do you support this action?":"No"},"Action 2.12 - Increase transparency in the management of groundwater resources in the Namoi region":{"Do you support this action?":"No"},"Action 2.13 - Investigate managed aquifer recharge in the Namoi region":{"Do you support this action?":"No"},"Action 2.14 - Ensure water can support sustainable economic diversification and transitioning economies":{"Do you support this action?":"No"}}

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Improving the health and resilience of water dependent ecosystems
{"Action 3.1 - Assess gaps in the flow regime that affect the health of the environment ":{"Do you support this action?":"No"},"Action 3.2 - Identify regionally significant riparian, wetland and floodplain areas to protect or rehabilitate":{"Do you support this action?":"No"},"Action 3.3 - Mitigate the impacts of water infrastructure on native fish":{"Do you support this action?":"No"},"Action 3.4 - Fully implement the NSW Floodplain Harvesting Program":{"Do you support this action?":"No"},"Action 3.5 - Remediate unapproved floodplain structures":{"Do you support this action?":"No"},"Action 3.6 - Improve understanding of water use and water quality at priority locations in the Namoi":{"Do you support this action?":"No"},"Action 3.7 - Investigate ways to improve connectivity with the Barwon–Darling River on a multi-valley scale":{"Do you support this action?":"No"},"Action 3.8 - Increase our knowledge of groundwater in the Namoi region":{"Do you support this action?":"No"}}

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Should any proposed actions in this Consultation Paper not be shortlisted and why?
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Agriculture in NSW alone is an 18 billion dollar industry and 71 billion Australia wide. It makes economic sense at the very least to continue to support and maintain the backbone of our country. Farmers already manage their resources throughout flood and drought. The cost to them is already exorbitant without resuming what they have already paid for. Farmers should not wear the continuing cost to sustain the unsustainable development of residential areas be it city or country, nor the new industry within these cities. If you can't support the growth, reduce growth, subdivisions and immigration. The water crisis is not created from farming, it is created from lack of vision, planning and implementation to support growing industry, community and demand. With over 60 floods, we have still not managed to capture and store 'some' of the excessive waste of water travelling through the Namoi basin system. Recycling and rain water harvesting through new dams and storage facilities is the only solution. The countless dust gathering studies and strategies produced without any sustained solution is pointless. The negative impact of all proposals within the shortlist draft to all rural communities, stakeholders and First Nations is unconscionable. I strongly oppose the strategy in its entirety and request formal response to this submission of objection. Regards [redacted]	Yes	Yes

Would you like to be kept updated on progress on the development and implementation of the Namoi Regional Water	Please provide your details below. - Email address	Please provide your details below. - Name	Please provide your details below. - Address	Please provide your details below. - Contact phone number	How did you hear about the Public Exhibition of this strategy?
Yes	[redacted]	[redacted]	[redacted]	[redacted]	Word of mouth

Nature Conservation Council
The voice for nature in NSW

NSW DPI

Regional Water Strategy Team

12 September 2022

By Email: regionalwater.strategies@dpie.nsw.gov.au

Submission: Second Draft Namoi Regional Water 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 *Second Draft Namoi Regional Water Strategy.*

This submission lists NCC's recommendations across the three sections of the Water Strategy.

Improving the health and resilience of water-dependent ecosystems

- Reorganise the order of the listed priorities so that they align with the principles of the Water Management Act 2000, with 'improving the health and resilience of water-dependent ecosystems' listed first.
- Include options that strengthen the protection of environmental and cultural assets of the valley, by directly and clearly linking environmental and cultural assets to objectives, strategies and associated outcomes of water sharing plans.
- Clearly link specific groundwater dependent ecosystems (GDEs) to objectives, strategies and associated outcomes in the water sharing plan. DPE should undertake comprehensive mapping of groundwater dependent ecosystems (GDEs), and use water sharing plans to protect them.

Floodplain harvesting

- NCC does not support the implementation of the NSW floodplain harvesting policy, particularly in the absence of an assessment of the cumulative environmental, cultural and socio-economic impacts of floodplain harvesting on downstream areas. To ensure environmental protection in line with the priorities of the Water Management Act, the in-valley flow targets to be included in Upper Namoi and Lower Namoi Regulated River Water Sources 2020 should be:
    - flows at Darling River at Wilcannia in the last 365 days has exceeded 1,400 ML/day for 10 consecutive days unless the Minister is confident that there are sufficient forecast gauge flows to achieve this flow rate and duration; or

  - flows at Darling River at Wilcannia in the last 485 days has exceeded 14,000 ML/day for 15 consecutive days unless the Minister is confident that there are sufficient forecast gauge flows to achieve this flow rate and duration; or
  - flows at Darling River at Wilcannia in the last 1,200 days has exceeded 30,000 ML/day for 15 consecutive days unless the Minister is confident that there are sufficient forecast gauge flows to achieve this flow rate and duration; or
  - there is less than 450 GL stored in the Menindee Lakes System unless the Minister is confident that there are sufficient forecast gauge flows to achieve this volume

- The removal of unapproved floodplain works is extremely overdue, and must be addressed as a matter of priority. Where unapproved works have been granted floodplain harvesting access licences, those licences must be voided with no compensation payable, and the total share components of the water source area be reduced by that volume.

Supporting the long-term water needs of Tamworth and other towns in the region

- Cancel the Dungowan dam project – it has been shown by the Productivity Commission, and Infrastructure Australia that this project will not meet its own objectives.
- Develop an Integrated Water Cycle Management Plan for all towns in NSW. In Tamworth, high priority should be given to advanced water treatment facilities for industries that are reliant on town water supplies.
- Reduce the demand for groundwater.
- Conduct a full assessment of the condition of ground water aquifers in the Namoi Valley.

Supporting a growing regional community under a more variable and uncertain future climate

- Advance all options in the strategy that support First Nations ownership of water and involvement in water management.
- Prioritise improving the water efficiency of irrigation industry.
- For the community to have confidence in water management in NSW, the state should develop a Water Register that the public can freely access from a single source. All details of entitlements should be available, 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 all offences under state and federal laws from non-compliant water take are publicly accessible.

Nature Conservation Council
The voice for nature in NSW

[redacted]

Date	First name	Last Name	Email address	Device Type	Address	Phone number	Do you identify as an Aboriginal person:
2022-09-12 13:50:24 +1000	Melissa	Gray	melissa_a_gray@hotmail.com	Desktop		431471310	No

Are you making this submission as an individual or as a representative of an organisation?	If making this submission as a representative of an organisation, who do you represent?	Do you agree that these are the priority water challenges for the Namoi region that we need to focus on?	Please outline what you see as the priority water challenges in this region over the next 20 – 40 years?	Proposed actions to support water needs of Tamworth and other towns	Do you have any comments on the proposed actions identified?	Supporting a growing regional community under a more variable and uncertain future climate	Do you have any comments on the proposed actions identified?
Individual							

Improving the health and resilience of water dependant ecosystems	Do you have any comments on the proposed actions identified?	Which actions should be implemented first and why?	I give my permission for mysubmission to bepublicly available on the NSW Department of Planningand Environment website.	I would like my personal details to be kept confidential.	Would you like to be kept updated on progress on the development and implementation of the Namoi Regional Water Strategy?	Please provide your details below. - Email address

Please provide your details below. - Name	Please provide your details below. - Address	Please provide your details below. - Contact phone number	How did you hear about the Public Exhibition of this strategy?	Do you agree that these are the priority water challenges for the Namoi region that we need to focus on?
				No

Please outline what you see as the priority water challenges in this region over the next 20 – 40 years?	Proposed actions to support water needs of Tamworth and other towns
I support the priorities but in the following order: 1. Improving the health and resilience of aquatic ecosystems Without resilient aquatic ecosystems, there can be no life in the region. The principles of the Water Management Act describe that the environment must be looked after first. This imperative must be reflected in the order of the priorities of this strategy. 2. Dismantling barriers to Aboriginal water rights Colonisation has disconnected First Nations People from their water, and the systems of Land Rights has not addressed the disconnection. Despite many decades of attempts, no government in NSW has made any inroads into addressing this injustice. 3. Addressing water security risks of regional towns across the Namoi Valley Regional growth must not be prioritised over environmental health, and First Nations rights to water. Non rainfall dependent water sources must be investigated for urban water supply. 4. Addressing Tamworth's long term water security risks Non rainfall dependent water sources must be investigated for urban water supply 5. Supporting a growing regional economy in a future of potentially reduced water availability Food security should be the number one priority of the irrigation industry, direction from government is required. Economic activity should be sustainable, not focused on growth.	{"Action 1.1 - Supporting the long-term water needs of Tamworth and other towns in the region":{"Do you support this action?":"Yes"},"Action 1.2 - Drought management planning for towns":{"Do you support this action?":"Yes"},"Action 1.3 - Stronger focus on water efficiency and demand management for towns":{"Do you support this action?":"Yes"},"Action 1.4 - Advanced water treatment facility for industries reliant on town water supplies":{"Do you support this action?":"Yes"},"Action 1.5 - Reduce uncertainty in groundwater security for regional towns":{"Do you support this action?":"Yes"},"Action 1.6 - Plan for the next long term water supply augmentation as Tamworth grows ":{"Do you support this action?":"Yes"},"Action 1.7 - Addressing water related skills shortages in small councils ":{"Do you support this action?":"Yes"}}

Do you have any comments on the proposed actions identified?	Supporting a growing regional community under a more variable and uncertain future climate
Do not support that Dungowan Dam continues to be a commitment of the NSW Government – it is not the most cost effective or efficient long-term solution for Tamworth water security. All towns should have an integrated Water Cycle Management Plan. Progressing advanced water treatment facilities for industries reliant on town water supplies should be the top priority for securing Tamworth's water supply. A full assessment of the condition of groundwater aquifers should be done before further reliance on groundwater for urban wter supply is established.	{"Action 2.1 - Invest in continuous improvement to surface water system modelling in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.2 - Accelerate investment in groundwater modelling in the Namoi region ":{"Do you support this action?":"Yes"},"Action 2.3 - Improve the participation of Aboriginal people in water management in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.4 - Improve public access to climate information and water availability forecasts ":{"Do you support this action?":"Yes"},"Action 2.5 - Undertake research to inform reviews of groundwater extraction limits":{"Do you support this action?":"Yes"},"Action 2.6 - Review the water allocation rules for licences in the Peel alluvium":{"Do you support this action?":"Yes"},"Action 2.7 - Understand risks associated with potential future activation of underused licences in the Peel Valley":{"Do you support this action?":"Yes"},"Action 2.8 - Make provision for voluntary licence conversions":{"Do you support this action?":"No"},"Action 2.9 - Support the development of new Aboriginal business opportunities in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.10 - Improve outcomes for Aboriginal people through place-based initiatives":{"Do you support this action?":"Yes"},"Action 2.11 - Support increased investment and research into industry climate adaptation":{"Do you support this action?":"Yes"},"Action 2.12 - Increase transparency in the management of groundwater resources in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.13 - Investigate managed aquifer recharge in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.14 - Ensure water can support sustainable economic diversification and transitioning economies":{"Do you support this action?":"No"}}

Do you have any comments on the proposed actions identified?	Improving the health and resilience of water dependent ecosystems	Do you have any comments on the proposed actions identified?
2.14 sustainable diversification of industry - there should be no coal seam gas industry established in the Namoi valley. No increase in high secirity licences in the valley. Assessing groundwater condition should be a priority. Improving the efficiency of irrigation should be a high priority of this strategy. Reduce demand for water so it is available to secure the environment, not to increase irrigation output.	{"Action 3.1 - Assess gaps in the flow regime that affect the health of the environment ":{"Do you support this action?":"Yes"},"Action 3.2 - Identify regionally significant riparian, wetland and floodplain areas to protect or rehabilitate":{"Do you support this action?":"Yes"},"Action 3.3 - Mitigate the impacts of water infrastructure on native fish":{"Do you support this action?":"Yes"},"Action 3.4 - Fully implement the NSW Floodplain Harvesting Program":{"Do you support this action?":"No"},"Action 3.8 - Increase our knowledge of groundwater in the Namoi region":{"Do you support this action?":"Yes"},"Action 3.7 - Investigate ways to improve connectivity with the Barwon–Darling River on a multi-valley scale":{"Do you support this action?":"Yes"},"Action 3.6 - Improve understanding of water use and water quality at priority locations in the Namoi":{"Do you support this action?":"Yes"},"Action 3.5 - Remediate unapproved floodplain structures":{"Do you support this action?":"Yes"}}	Protection of environmental assets must be enshrined in water sharing plans. The current floodplain harvesting policy does not protect the environment, rather it locks in unsustainably high levels of water diversion. The 500% carryover allowance allows large volumes to be taken at once. Unapproved works should be assessed before licences are issued. Rainfall runoff should not be exempt from licencing. The cumulative impact of floodplain harvesting on the environment, First Nations Cultural values and socio economics of downstream communities must be assessed before licencing. The Namoi target flows should be sufficient to allow for critical human and environmental needs downstream. The target at Menindee Lakes to trigger floodplain harvesting and supplementary access must be 450 GL to prevent further fish kills in future droughts.

Should any proposed actions in this Consultation Paper not be shortlisted and why?	Should any other options in Attachment 1 of the Consultation Paper be shortlisted?	Which actions should be implemented first and why?	I give my permission for my submission to be publicly available on the NSW Department of Planning and Environment website.	I would like my personal details to be kept confidential.	Would you like to be kept updated on progress on the development and implementation of the Namoi Regional Water Strategy?
Protection of the specific, identified environmental and cultural values of the Namoi Valley must be clearly linked to the objectives, strategies and indicators in the water sharing plans. Water purification to secure Tamworth's water supply. Reduce industries demand for water as a priority. Focus on ways to improve food security through the irrigation industry.		Protection of the specific, identified environmental and cultural values of the Namoi Valley must be clearly linked to the objectives, strategies and indicators in the water sharing plans. The cumulative cultural, environmental and socioeconomic impact floodplain harvesting has had on downstream must be assessed. The Dungowan dam project must be cancelled	Yes	No	Yes

Please provide your details below. - Email address	Please provide your details below. - Name	Please provide your details below. - Address	Please provide your details below. - Contact phone number	How did you hear about the Public Exhibition of this strategy?
melissa_a_gray@hotmail.com	Melissa Gray	PO Box 2016 Dubbo NSW 2830	431471310	Direct email

Date	First name	Last Name	Email address	Device Type	Address	Phone number	Do you identify as an Aboriginal person:
2022-09-12 16:10:45 +1000	Healthy	Rivers	healthyriversdubbo@gmail.com	Mobile	Po Box 216 Dubbo NSW 2830	0431 471 310	No

Are you making this submission as an individual or as a representative of an organisation?	If making this submission as a representative of an organisation, who do you represent?	Do you agree that these are the priority water challenges for the Namoi region that we need to focus on?	Please outline what you see as the priority water challenges in this region over the next 20 – 40 years?	Proposed actions to support water needs of Tamworth and other towns
Organisation	Environment	No	The order of these priorities is not inline with the principles of the Water Management Act 2000. 1. Improving the health and resilience of aquatic ecosystems 2. Dismantling barriers to Aboriginal water rights. 3. Addressing water security risks or regional towns across the Namoi Valley. 4. Addressing Tamworth's long-term water security risks 5. Supporting a growing regional economy in a future of potentially reduced water availability.	{"Action 1.1 - Supporting the long-term water needs of Tamworth and other towns in the region":{"Do you support this action?":"Yes"},"Action 1.2 - Drought management planning for towns":{"Do you support this action?":"Yes"},"Action 1.3 - Stronger focus on water efficiency and demand management for towns":{"Do you support this action?":"Yes"},"Action 1.4 - Advanced water treatment facility for industries reliant on town water supplies":{"Do you support this action?":"Yes"},"Action 1.5 - Reduce uncertainty in groundwater security for regional towns":{"Do you support this action?":"Yes"},"Action 1.6 - Plan for the next long term water supply augmentation as Tamworth grows ":{"Do you support this action?":"Yes"},"Action 1.7 - Addressing water related skills shortages in small councils ":{"Do you support this action?":"Yes"}}

Do you have any comments on the proposed actions identified?	Supporting a growing regional community under a more variable and uncertain future climate
Cancel the Dungowan Dam project. It will not deliver water, there are better options to secure Tamworth water security. Prioritise advanced water treatment facilities for industries that are reliant on towns water supplies. Reduce the demand for groundwater.	{"Action 2.1 - Invest in continuous improvement to surface water system modelling in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.2 - Accelerate investment in groundwater modelling in the Namoi region ":{"Do you support this action?":"Yes"},"Action 2.3 - Improve the participation of Aboriginal people in water management in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.4 - Improve public access to climate information and water availability forecasts ":{"Do you support this action?":"Yes"},"Action 2.5 - Undertake research to inform reviews of groundwater extraction limits":{"Do you support this action?":"Yes"},"Action 2.6 - Review the water allocation rules for licences in the Peel alluvium":{"Do you support this action?":"No"},"Action 2.7 - Understand risks associated with potential future activation of underused licences in the Peel Valley":{"Do you support this action?":"No"},"Action 2.8 - Make provision for voluntary licence conversions":{"Do you support this action?":"No"},"Action 2.9 - Support the development of new Aboriginal business opportunities in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.10 - Improve outcomes for Aboriginal people through place-based initiatives":{"Do you support this action?":"Yes"},"Action 2.11 - Support increased investment and research into industry climate adaptation":{"Do you support this action?":"Yes"},"Action 2.12 - Increase transparency in the management of groundwater resources in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.13 - Investigate managed aquifer recharge in the Namoi region":{"Do you support this action?":"Yes"},"Action 2.14 - Ensure water can support sustainable economic diversification and transitioning economies":{"Do you support this action?":"Yes"}}

Do you have any comments on the proposed actions identified?	Improving the health and resilience of water dependant ecosystems	Do you have any comments on the proposed actions identified?	Which actions should be implemented first and why?	I give my permission for mysubmission to bepublicly available on the NSW Department of Planningand Environment website.
Improving the efficiency of irrigation industry should be the highest priority in this section. Do not support any new coal or gas projects in the Namio Valley.	{"Action 3.1 - Assess gaps in the flow regime that affect the health of the environment ":{"Do you support this action?":"Yes"},"Action 3.2 - Identify regionally significant riparian, wetland and floodplain areas to protect or rehabilitate":{"Do you support this action?":"Yes"},"Action 3.3 - Mitigate the impacts of water infrastructure on native fish":{"Do you support this action?":"Yes"},"Action 3.4 - Fully implement the NSW Floodplain Harvesting Program":{"Do you support this action?":"No"},"Action 3.5 - Remediate unapproved floodplain structures":{"Do you support this action?":"Yes"},"Action 3.6 - Improve understanding of water use and water quality at priority locations in the Namoi":{"Do you support this action?":"Yes"},"Action 3.7 - Investigate ways to improve connectivity with the Barwon–Darling River on a multi-valley scale":{"Do you support this action?":"Yes"},"Action 3.8 - Increase our knowledge of groundwater in the Namoi region":{"Do you support this action?":"Yes"}}	Environmental assets in the Namoi must be identified in the water sharing plans, and clearly linked to objectives and strategies. Do not support the licencing of large volumes of floodplain harvesting with 500% carryover rules. The in valley targets must be high enough to protect the environment.	Options that legally strengthen environmental protection and address water justice for First Nations people	Yes

I would like my personal details to be kept confidential.	Would you like to be kept updated on progress on the development and implementation of the Namoi Regional Water Strategy?	Please provide your details below. - Email address	Please provide your details below. - Name	Please provide your details below. - Address	Please provide your details below. - Contact phone number	How did you hear about the Public Exhibition of this strategy?	Do you agree that these are the priority water challenges for the Namoi region that we need to focus on?
No	Yes	Healthyriversdubbo@gmail.com	Healthy Rivers Dubbo	Po box 216 Dubbo NSW 2830	0431 471 310	Direct email	

Please outline what you see as the priority water challenges in this region over the next 20 – 40 years?	Proposed actions to support water needs of Tamworth and other towns	Do you have any comments on the proposed actions identified?	Supporting a growing regional community under a more variable and uncertain future climate	Do you have any comments on the proposed actions identified?	Improving the health and resilience of water dependent ecosystems	Do you have any comments on the proposed actions identified?	Should any proposed actions in this Consultation Paper not be shortlisted and why?

Should any other options in Attachment 1 of the Consultation Paper be shortlisted?	Which actions should be implemented first and why?	I give my permission for my submission to be publicly available on the NSW Department of Planning and Environment website.	I would like my personal details to be kept confidential.	Would you like to be kept updated on progress on the development and implementation of the Namoi Regional Water Strategy?	Please provide your details below. - Email address	Please provide your details below. - Name	Please provide your details below. - Address

Please provide your details below. - Contact phone number	How did you hear about the Public Exhibition of this strategy?	

Submission by [redacted] Dated 18 September 2021

Lodgement via Webmail system: regionalwater.strategies@dpie.nsw.gov.au

** To be Redacted

DRAFT REGIONAL WATER STRATEGY: NAMOI

PUBLIC EXHIBITION: SHORTLISTED ACTIONS CLOSING 18 SEPTEMBER 2022

This submission is lodged on a personal and individual basis.

The context of my experience is:

I am a resident of [redacted] (31 years) and have lived somewhere in the [redacted] for some 55 years. I have never farmed or irrigated. I spent my younger years in a horticultural area (Riverland SA) and have during my life travelled and observed/taken an interest in the Murray Darling System. Professionally as a Civil Engineer (45 years) in Construction (mainly pre-contract phases) I have worked on a wide range of water infrastructure projects.

Having perused the Draft Regional Water Strategy Shortlisted Actions – Namoi August 2022, attended a Public information session and conducted my own enquiries, to the limit of my best endeavors as an individual, I make the following comments relating to the Peel/Namoi.

The primary focus of my comment is from the perspective of water security for Tamworth as a resident. Having sated this though, I believe that my experience and thought process takes account of the wider spectrum of matters water.

Response Overview

I have previously made a submission (ref: 210328_Submission_DPIE_Draft NSW Water Strategy) in relation to the wider NSW Water Strategy. It would appear that the issues raised in that submission have not filtered down to the level of the Namoi as a region.

My view is that the exhibition document presented is seriously deficient in terms of the analysis of factors which underpin the subject of water security.

Major deficiencies in my view are:

- Water Security for Tamworth is based upon a New Dungowan Dam.
- There is no contingency item should construction of this dam not proceed
- Many of the points are couched in actions which are ongoing yet to be finalized or soft actions which are not fully defined
- It appears the case that this document is a final exhibition prior to the draft report being further actioned.
- The report in my view does not reflect a Holistic approach to the management strategy of water management.
- The report requires such modification to counter the construction of a New Dungowan Dam not proceeding that necessitates a further exhibition in order that revisions made may be scrutinized prior to proceeding to be actioned as part of a Strategy,
- Ditto the above point for other changes made to the Strategy document as highlighted in this submission.

The Document Presented for Public Comment

At page 101 Figure 19 states that we are at Public consultation 2, assess and shortlist actions, the next phase being Implement and review. Integrate existing initiatives with new solutions. As such it is interpreted that apart from modification due to Public comment that this document constitutes the Strategy to be implemented.

The document proposes that a New Dungowan dam (at $1.3 B cost) is the solution to Tamworth's water security to support growth upto 20%. (page 29)

Meanwhile the very subject of Water Sharing Plan(s) which provide the very basis of how water is allocated is not covered in this document. It should be noted that 60 percent ie 60GL of the capacity of Chaffey Dam was released in the 18 months January 2018 to June 2019 (in addition to any inflows).

In addition to the above, the document is (in my view) somewhat dis-jointed, contains significant numbers of actions that are couched in open ended and non-specific language.

Furthermore a number of actions make reference to the NSW Water Strategy, however, the details of how that informs the actions is pending/not provided.

Likewise some of the options provided for progression will have impacts on other Regions (ie water diversions), yet there is no feedback as to what those Regions see as the effect upon them.

Similarly there is reference to "Rapid Cost Benefit Analysis" wherein many options were curtailed, yet the rigor of such evaluations is not further closed out.

Given that the time to construct and commission a new dam might be 5 plus years (weather dependent on top of that) it would seem prudent to have a short term strategy covering such period. There is none provided.

Whilst history can be ignored, it is a fact that such history informs the future. Having watched and waited for the Chaffey Dam Upgrade to come on line in 2016, the Political posturing about the improvement in Tamworth's water security had evaporated into "pixie dust" by mid 2019 following the release of 60 GL of Chaffey capacity in a 18 month period. Noting that an additional 40 GL of capacity was generated by the upgrade, the reality was that Tamworth town users obtained Nil benefit from that and faced drastic water restrictions.

The point made is that this happened once and that unless there are actions to prevent it happening again it can happen again. The reality is that in the Drought of Record had Tamworth scored 10 GL of the 40 GL volume upgrade, Tamworth would have fared much better.

Further issues the Strategy is silent on include:

- The gross over allocation of Licensed Shares (surface and ground) compared with sustainable yield by factors of 5 or 6. There is no solution provided as to how this may be rectified.
- Sleeper Licences. There is no solution provided as to how this situation may be rectified

The Public Information session I attended at Tamworth on 08 September 2022 was informative in provision of perspective from DPIE officers and in Public comment on the document presented. Arising from that was some strong negative comment about the "robustness of the report". For future reference it is my view that such consultation be conducted much earlier in the exhibition period.

One aspect of the DPIE address was that large centres like Tamworth cannot be allowed to run out of water. Concurrently a risk based approach was espoused which clearly is counter-intuitive to that scenario.

A Holistic Approach

For a whole number of reasons it becomes expedient to "cherry pick" solutions without giving full regard to the overall scenario and how all the factors inter-relate.

It is easy for attention to be given to points focused on by vocal proponents and to focus on matters in isolation to the combined view.

As a final outcome, the strategies within each region must work for the individual region whilst sitting within a NSW wide strategy which then fits within a Nationwide strategy providing for downstream users.

Within the region(s) Water Sharing Plans provide the framework within which available water is allocated supplemented by demand management, recycling

Meanwhile the needs of the stakeholders, Critical Human needs, Stock/Landholder Basic Rights, Environment, First Nation people High Security Industrial Use must be considered and provided for.

A holistic approach will consider all factors and consider their inter-dependence and provide a balanced outcome.

Recycled Water - Industrial Process

Many commenting on this process seemingly do not appreciate the dynamics of the situation from a Holistic viewpoint.

It is important to realize that as the percentage of water available for is less than unity, it will never be a standalone solution.

Currently the Tamworth Regional Council (TRC) generates around 4 GL per annum of waste water. Currently it is understood that TRC reserve about 1 GL of this wastewater for construction and watering purposes with the other 3 GL going to a re-use farm which produces fodder under a commercial lease arrangement.

It is understood that some trials are taking place regarding further treating the wastewater using a form of reverse osmosis to produce potable quality water for use in industrial (abattoir) process. It is understood that the process generates a byproduct of brine of about 25 percent of input that requires treatment and disposal. This means that of the original 4 GL less the 1 GL reserved for TRC use that a useable output of 3 GL by 75 percent = 2.25 GL per annum is available equating to approximately 25% of the existing raw water usage.

It is understood that this quantum of recycled water would support an abattoir expansion proposed and that it would provide a relatively secure supply basis irrespective of drought restrictions applied to the town water supply.

At this juncture I must point out that I am not in favor of introducing recycled wastewater back into the drinking water system or the food chain (especially when raw water bypasses the Town Supply and is used for irrigation of Cotton and Fodder) due to lack of control over what may enter the wastewater stream. (Having made this point I could concede that I would have no issue with using recycled water within a closed system eg in say a Space Station scenario where the inputs are closely monitored/managed).

I further comment on the use of Singapore as an example of recycled water. From experience I have happily used the water to wash/bathe in a domestic situation. However, it is my personal observation that the Government of Singapore exerts far more influence on the lives of the population and that the population

are generally more attuned to these values compared to Australia. I observed the use of copious amounts of bottled water and use of public water bubblers being far less frequent than what I observe in Australia

To consider the issue of Recycled Water in a Holistic manner, it can account for approximately 25 percent of the raw water intake, there is the ability to use the volume available after processing to a potable standard to underpin an abattoir expansion and provide a stable water supply. That in itself solves the issue of recycled water in the drinking water.

However, the issue of the byproduct (brine) remains, although there is potential for recovery of constituent chemicals for non food uses.

A further issue remains in that the reuse farm is then denied water for fodder production meaning fodder must be sourced from elsewhere or other arrangements must be made to secure water for fodder production, potentially increasing demand for General Security allocations.

There are costs involved in generating recycled water which I will not go into detail on, however, these could be considered a trade-off for security of supply and could be offset by not applying sewer disposal costs for process wastewater.

Above, I have used the term Holistic approach, the argument put forward above for recycled water is (in my view) illustrative of what I deem to be a Holistic approach for the subject.

The Strategy on Exhibition does not provide the level of detail used above, something I consider it being deficient in.

Reticulated Recycled Water (Purple Pipe Scheme)

For Tamworth this is probably a lower priority as Wastewater is already recycled to the re-use farm and potentially this could be re-purposed to purified industrial use.

The Drought Cycle and Drought Resilience

My observation(s) (without the benefit of comprehensive data) is that typically Tamworth runs on a 5 to 6 year full to empty cycle.

Part of the issue with droughts is that drought itself exacerbates demand on the remaining water. Having water available requires either storage or supplementing from elsewhere.

Various options are available to “augment, stretch or enhance” the available water supply.

- **Substitution**

  Effected by changing processes and substituting recycled water to reduce demand for raw water. (or additionally provide scope for Industrial Expansion. Views on this are covered under the heading Recycled Water – Industrial Process above.

- **Supplementation**

  Effected by sourcing water from new sources within and/or sources outside the catchment. It is important that such sources are drought proof and do not compromise supply in those other regions. Practical realities of scale limit this to Township supplies. The concept of a State Wide Distributed Water Grid is expanded under a separate heading later.

- **Recycling of Runoff (Rain/Stormwater)**

  My understanding is that BASIX requires all new dwellings to have 5 kL tankage with linkage to toilet flushing and garden use. There is scope to increase the minimum size tank in order that an improved annual yield is obtained.

In terms of domestic residences encouragement should be provided for tankage installation for garden and pool usage.

In terms of capture and re-use from Stormwater systems options should be evaluated and further considered, especially for public spaces.

The point is made that water captured in this fashion is removed from the general environment as it would otherwise end up on the ground to soak away or in the case of capture from stormwater systems, not end up in river systems.

- **Demand Management**

  The annual treated water usage for Tamworth has remained steady around 10 GL per annum for a period approaching 30 years, despite the growth which has occurred over that period. The document on exhibition does not appear to analyze any factors which may have contributed to this outcome. Drought management strategies are mentioned, however, those in existence for Tamworth whilst well trued and proven are in reality reactionary responses once a drought has commenced ie dam levels have dropped below the defined trigger points.

  What is needed in conjunction with these reactionary measures, are measures which act to reduce demand overall ie ongoing efficiency measures.

I comment that the Draft Strategy on Exhibition does not deal in detail with the aspects raised above. It is appreciated that some of these activities are day to day business for Councils, however, they are part of considering a Holistic solution.

<u>Water Portfolio Management</u>

- **Use of Chaffey Pipeline**

  The present position where-in use of this pipeline is only invoked once Chaffey falls below 20 percent should be reviewed. This puts Tamworth in a situation where reserves are seriously depleted before the significant savings realized by not transmitting water to Tamworth via river are realized. Operation of this pipeline effectively doubles the remaining endurance of supplies. Operation should be incorporated into Tamworth Drought Management Plans.

  This review will need to be accounted for in Water Sharing Plans (WSP) and considered in conjunction with Environmental releases.

  This point is not considered within the Draft Strategy Exhibited for comment. There would be a Nil Cost to implement this operation.

- **Timing of Environmental Releases**

  It appears to me that currently Environmental releases happen according to a prescribed program rather than being based upon need. As the drought of 2020 broke and there were reasonable flows in the Peel many (myself included) queried this with the authorities. Advice offered at the time was that this was in accord with the WSP. Any water thus saved could be “banked” for future Environmental release providing for enhanced outcomes and resilience. Arguably some of this could be applied to aquifer recharge in the Peel.

  This point is not considered within the Draft Strategy Exhibited for comment. There would be a Nil Cost to implement this operation.

- **Town Water Savings**

For Town Water Supplies it seems counter-intuitive that savings made are not applied to the benefit of the townfolk who have made the effort. As such any benefits accruing should be banked as a holding in storage.

This point is not considered within the Draft Strategy Exhibited for comment. There would be a Nil Cost to implement this operation.

- **Water Source/Zone Amalgamations**

  In recent years the Peel Alluvium Groundwater Source has been amalgamated with the Namoi source. This is believed to facilitate the transfer of entitlements in and out of the former Peel Alluvium area.

  In terms of Surface Water should any amalgamation occur this could have implications for Peel Valley users, and in my opinion should not be allowed.

  This point is not considered within the Draft Strategy Exhibited for comment.

- **Water Trading**

  This point is not considered within the Draft Strategy Exhibited for comment.

  Particularly with Surface Water there is potential for water to be transferred downstream through trading. This may not be such an issue when a water holder sells surplus unused entitlement within a water year (without any addition for carryover), however, wholesale transference of licenses could become problematic.

- **Other**

  Issues raised under this point also interact with other points made in this submission. Again indicating why I hold Holistic evaluation of such high import.

Water Sharing Plans (WSP's)

The Draft Strategy Exhibited for comment does not deal with WSP's. Of predominant comcern to Tamworth is the Peel Surface Plan.

It is considered that some changes can be made with little effect and Nil Cost which would significantly enhance Water Security for Tamworth.

Significantly right at this juncture whilst Chaffey is full there would be no effect on Non Town ie High Security (HS) and General Security (GS) users.

- **Longer Term Allocation Algorithm**

  Whilst perhaps appropriate for Irrigation, the current basis of AWD's being made on a two year basis fails the longer term needs of Town Supply.

  It is my view that such algorithms should reflect the Fill/Empty cycle of Tamworth's storages and water sources. This should allow updating on a rolling basis and be updated to consider inflow and be based on water actually held.

  This point is not considered within the Draft Strategy Exhibited for comment. There would be a Nil Cost to implement this operation. Water Security for Tamworth would be enhanced as a result in that due consideration of the longer term situation would be mandated as part of the process.

- **Larger Town Supply Compartment In Chaffey Dam**

When Chaffey augmentation was completed (and filled) in 2016 to great Political fanfare of greatly improved water security into the future an additional capacity of 40 GL was added.

During Consultation sessions in updating the Tamworth Regional Council Drought Management Plan 2015, in response to this matter it was advised that practice with the former capacity was to stop General Security releases when a dam capacity of 40 percent was reached. It was the expectation at that time that this would be the case for the augmented capacity. However, as history reveals this was not the case in 2019 when Chaffey was run to 22 percent capacity before General Security releases ceased.

The point made is that it appears all of the capacity increase (40 GL) was not applied to Town Security ostensibly due to the Water Sharing Plan not being updated for the revised capacity. This also was an emerging situation wherein whilst storage decreased and inflows were lower than ever previously recorded, no corrective action was applied.

It remains significant that in 18 months from January 2018 to June 2019 some 60% capacity (plus inflows) of Chaffey Dam was released. Considering Tamworth Water Supply at 10 GL per annum, Peel Irrigators at 6.4 GL per annum and Environment at 7 GL per annum this volume of release was almost double needs.

Had a pro-rated share of the 40 GL increase ie 63 GL x 40% to 100 GL x 40% = 15 GL been fairly applied to the security of Tamworth's Water supply, Tamworth would have breezed through the drought of record.

It is considered that changes can be made with little effect as Chaffey Dam is full and Nil Cost which would significantly enhance Water Security for Tamworth.

It is appreciated that this is based on current usage levels, however, it does provide a short to medium term option and the timing with the dam currently full means that there would be no impact to General Security users.

- **Only allocate water actually held**

  It remains my view that Tamworth was placed in a dire water Security situation in 2020 because of poor management practices. Public sessions of the time attempted to portray lower than anticipated inflows (whilst at the time ignoring other droughts of record). Meanwhile releases continued irrespective of this situation developing. This lead to Tamworth being left with 22 GL when GS releases were curtailed. Again "compliance with terms of the WSP" was the reason provided at the time

  If only water actually held were released (instead of relying on predicted inflows) this situation would have been averted. This would apply as the Available Water Determinations are considered for each forward Water year.

  It is considered that changes can be made with little effect and Nil Cost which would significantly enhance Water Security for Tamworth.

- **<u>Aspects of Water Licensing</u>**

From enquires I have made it appears that in the Peel Valley irrigates 6500 Ha which is restricted to an annual licensed average take of 6.4 GL.

The licensing is greatly over-allocated in share. This is converted to shares against which Available Water Determinations are applied by share.

There are a significant number of Sleeper Licenses which if activated will cause problems for established irrigators as the AWD yield per share for their holdings will reduce as more shares are activated.

Understandably this situation has arisen from years of poor practice. For Surface water significant risk arises should a one megalitre for a one share allocation be made (as appears to be the case referenced at page 40 of the report. It was certainly the case in 2018-2019 water year where it was 1.0 ML per share reduced to 0.38 ML per share.

Reference is made to conversion from General Security to High Security based on a ratio of license units. This is not supported without rationalization of the share numbers back a match with the license volume.

The point is made that some irrigators hold both surface and ground licensing where proximity to the Peel permits. The connectivity between surface and aquifer in the Peel would seemingly confer an unfair advantage to some who are able to 'double dip".

Storage

- Aquifer Recharge/Storage was mentioned, however, without any specific detail. It is certainly something that needs more detail consideration. Virginia in South Australia utilises recycled effluent from Bolivar which is pumped into the aquifer.
- With the Peel similar might be easily accomplished using a series of offstream (storages) which capture water from high flow events which invoke supplemental take under license conditions provided downstream flow targets are achieved. This could be as simple as establishing suitable offtake weir levels.

A State Water Grid

I am quite familiar with the South Australian Morgan – Whyalla Pipeline and the Mannun – Adelaide pipelines. In the case of Morgan/Whyalla the pipeline is the sole source of water.

During the drought of 2020 it was not only Tamworth that faced severe water security issues.

The concept I propose is based on the interconnection of existing and new dams and potentially a desalination plant which provides the ability to transfer water between storages and to augment this with desalination when necessary. The idea in the case of Tamworth is that it acts as a supplementary source to bolster supplies from dams especially in times of drought.

I would envisage a system with a trunk capacity of around 100 ML per day, roughly about 1200mm diameter. Laterals could be run to towns as required where they rely on a bore source or do not have a suitable dam.

In order to keep this submission concise, I will not further expand on detail. Routes/capacities, design will further inform the case as it develops. There are numerous options with development timing and phasing which may allow a phased delivery.

Compared to a singular 22 GL Dam (New Dungowan) providing a singular town this could additionally support other towns especially considering the wishes for de-centralisation.

A pipeline from a source outside the catchment will provide additional reliability of supply moving to an absolute one if coupled with desalination.

Preferred Options/Solution

Ensuing from the points raised within this submission:

- Re-draft Water Sharing Plans
- Provide a larger Town Water compartment in Chaffey Dam
- Prevent a repeat of 2019/2020 by drafting specific legislation/protocols
- Utilise Recycled Water from Effluent discharge for Industrial Process (about 25% additional to existing treated water use)
- Establish a State Pipeline Grid
- Build a Desalination Plant

Conclusion

The Draft Document placed on Exhibition is limited in scope and reliant upon construction of a New Dungowan Dam as the sole (major) option for Tamworth Water Security. There is no plan B alternative should the New Dungowan Dam not proceed.

I consider the rigor of the outcomes proposed to be low, and detect an emphasis on the use of figures to justify cases which are less than can be achieved. I also detect a strong emphasis on Irrigation ruling the discussion with relatively little emphasis genuinely being given to Environmental. First People's and Town Water Security issues.

The Draft Document appears incomplete/inconsistent as a Holistic consideration of the Water Issues especially in that it does not incorporate consideration of how it interfaces with Water Policy, Water Sharing Plans, Relationship with similar Draft Strategies of other regions and the overall NSW Wide Strategy.

Furthermore many of the Actions are couched in open ended language and contain non-specific outcomes.

Within my submission (focused on Tamworth's Water Security) I identify a number of solutions which provide immediate effect at no cost, especially when Chaffey Dam is currently full.

Water Policy in NSW is in my view a mess and lacking in direction unless to do with irrigators and over-extraction. It is galling for Tamworth and residents to have been placed in the situation it was during 2019 and 2020 when this was due to nothing more than mis-management of our water supplies by NSW Government operatives.

Hopefully from this process, should comments from this process be duly considered, solutions will be devised such that these events are not able to be repeated.

Thank you for considering my submission.

[redacted]

18 September 2022

Submission on Draft Namoi Regional Water Strategy

National Parks Association of NSW, Tamworth Branch

There is still not enough emphasis on the environment, there other things that need to be taken into consideration apart from the economy. Priority 5, 6 and 7 are all about economic growth and we need to consider whether this is sustainable in the face of climate change.

The projections for the future of water in the Namoi region with increasing climate change are not encouraging. Less than half the average rainfall rainfall, more droughts, higher evaporation and reduced ground water recharge. Instead of concentrating on "business as usual in agriculture and mining" it is obvious that we have to rethink irrigated agriculture and mining in the region.

There is too much emphasis on supporting the growing economic water needs of Tamworth at the expense of the environment. Too much emphasis on growing economic wealth based on water when the future, due to climate change is so uncertain. Instead of building a new Dungowan Dam (which in any case has already been shown to be very poor value for money), Tamworth needs to enact water conservation schemes such as water tanks, utilising greywater schemes, recycled water drinking schemes and permanent water restrictions. We need to value water more.

In the options there seems to be an emphasis on unrealistic solutions which involve building more dams, even when there is an admission that not even that will be enough. Stealing water from other catchments on the coast are crazy ideas and will destroy the environment.

We also need a proper understanding of ground water in the region. In times of climate change recharge is not guaranteed and people need to understand this.

[redacted], National Parks Association of NSW

2/09/2022 [redacted]

Department of Planning and Environment Water

Locked Bag 5022

Parramatta NSW 2124

Saturday 17th September 2022

Submission on the Draft Regional Water Strategy Namoi:Shortlisted Actions-Consultation Paper

Water and Waterways have been my lifetime interest. My childhood was spent on a property in western NSW and I have always known how precious water is and the need to use it sparingly and wisely.

I live in [redacted] and I do not support the new Dungowan Dam. Dams are old technology for providing water. The water captured by this dam would result in dehydration of the affected soils and Australia cannot afford to loose any more arable land. Large volumes of this captured water would be lost to evaporation and this volume would increase over time due to Climate Change. Dams have been superseded by more efficient technology such as water recycling and additional sustainable uses of water. The 1.3 billion dollars for the dam would be better spent on water recycling and the remainder going to health and education.

I support using recycled grey water and I support using purified recycled water for drinking. I lived and worked in the Ballina area for many years where grey water was recycled. This was very successful. There is a need now to start planning for Tamworth to introduce drinking water from recycled water sources. This option is used successfully in Europe , Singapore and many American States . London has been using purified recycled water since the 1950's. Many inland towns will have to augment their drinking supplies in the future by using purified recycled water because this method is climate proof.

I support industries using recycled water.

I do not support industries which are water intensive and cannot manufacture their own water for industrial use.

I do not support industries which pollute the ground and water ways.

I support research and education about our ground water systems. This is a high priority.

The Great Artesian Basin is probably Australia's greatest asset and it should be protected from pollution and harm caused by fracking. I do not support any gas fracking or any gas infrastructure in the Namoi Valley area covered by this draft Strategy. I am familiar with the Pilliga area and the Pilliga has one of the very few recharge areas of the Great Artesian Basin. The Great Artesian Basin lies underneath 22% of the Australian Land mass. Water from the Great Artesian Basin has been used and maintained by Aboriginal people for thousands of years and it is used for drinking water and for domestic purposes by many farms and towns . It is also used for stock and cropping.

Gas fracking and gas pipelines in the Liverpool plains would be disastrous. Only 4% of Australia's land mass is arable we cannot lose any more land to fracking.

I do not support coal mining in the Namoi Valley because this industry is water intensive, causes water pollution , causes social disharmony within its surroundings and releases green house gases which cause and exacerbate Climate Change.

I support the protection of the Pilliga and the Liverpool Plains from gas fracking and coal mining to protect the integrity of the Great Artesian Basin

I support all actions in the draft strategy involving Aboriginal Peoples .

I do not support the present floodplain harvesting policy because it is too loose.

I support the removal of unapproved structures in the floodplain.

I support more transparency of water management in the Namoi Valley.

I support the use of more flow gauges in the Namoi catchment

I support higher flow targets to improve connectivity to the Barwon-Darling

Thank you

Yours sincerely

[redacted]

Department of Planning and Environment Water

Locked Bag 5022

Parramatta NSW 2124

Friday 16th September 2022

Submission on Draft Regional Water Strategy Namoi: Shortlisted Actions – Consultation Paper

I live in Tamworth and have spent most of my working like in the northwest of NSW and am acutely aware of the need for water security . Thank you for the opportunity to make this submission.

First Nations People

I support the dismantling of barriers to Aboriginal water rights and this should be given a high priority. First Nations peoples only own 1% of all water licences in Australia according to a 2020 study of water rights in the Murray-Darling Basin and "water is central to the cultural, social and spiritual identity of Australia's First Nations people as well as their livelihoods" Murray-Darling Basin study 2021. First Nations people have a spiritual obligation to care for surface and ground water resources as part of their commitment of caring for country .

The Gomeroi people have successfully cared for the water of the Namoi region for millennia and their knowledge should be respected and heeded. Gomeroi elders have continually stated that the Great Artesian Basin(GABA) is sacred to them and that they wish to protect the Pilliga because of its importance to their people. I have heard Gomeroi elders explain their position on the Pilliga , the Liverpool Plains and the GABA. We should listen to their wisdom and heed it.

The GABA has very few recharge areas and one of these is the Pilliga sandstone therefore this area should be protected from anything which can cause harm such as gas fracking which can cause irreparable damage by the release of toxic waste onto the recharge area and the resultant contamination of surface as well as ground water. This has been well documented by scientists such as Professor Stuart Khan, Professor in School of Civil and Environmental Engineering UNSW. Irreversible damage to the GABA can be caused below the surface as documented by scientists such as Professor Mathew Currell hydrogeologist, School of Engineering RMIT University Vic.

Many people in the Namoi Valley depend on the GABA water for stock, crops, domestic use and drinking water. Some towns such as Coonamble rely entirely on this ground water for their water supply.

Gas fracking cannot be permitted in the Pilliga and the Liverpool Plains . Gas pipelines cannot be permitted either because they will inevitably go through ground water.

I support Actions 2.3, 2.9 and 2.10. In addition water sources such as hydropanels which are capable of producing water from the water vapour in the air should be considered for small communities such as

Walgett and Walhallow and for small schools. These panels have been used successfully elsewhere such as Murrurundi Public School.

Supporting the long-term water needs of Tamworth and other towns in the region.

The Namoi RWS should reflect the NSW Water Management Act 2000 which says that only critical human needs should be prioritised above river health.

I do not support the proposed new Dungowan Dam. It will not contribute to Tamworth's water security for many reasons such as the cost of 1.3 billion dollars being too high. The project manager at the 25.8.22 webinar said that the initial low costings were incomplete and inaccurate however the present costing of is correct . This would result in impossibly high water costs to stakeholders. The ANU Professor of Water Management at the Fenner School of Environment and Society , Professor James Pittock, has given a scathing assessment of the viability and ethics of the financial options for the proposed dam project and Infrastructure NSW's recently released 20 yr strategy stated that the project should be reconsidered . The recent NSW budget committed no new funding for the project and it has been said that any possible funding from NSW would be dependent on the Federal Government covering 50% of the cost. There has been no financial commitment by the Federal Government and the recent report by Infrastructure Australia has recommended that the project not be listed as a priority. The Federal Minister for Water and the Environment has said that a comprehensive review of alternative options and further investigations of the project's business case must be done before and if approval can be given.

Modelling in the previous NSW draft report showed that with Climate Change rainfall and storage of water will be increasingly unpredictable . Stream flow has decreased overall by 12% (CSIRO/BOM Report 2019)A recent report also predicted that ground water will decrease by 15% by 2060 . Australia's average temperature has already increased by 1.44 degrees since national records began in 1910. Tamworth has experienced many hot windy days over 40 degrees in recent years and high temperatures and dry winds result in a dramatic increase in evaporation as shown in the modelling in the previous draft strategy. The loss of water by evaporation from dams is dramatic.

This proposed dam will receive little water at best, an expected yield of 7GL(dpie dam information brochure) and times of no inflow as shown in the NSW draft report. I have seen Terrible Billy creek with no flow at all .There is no rationale for the new Dungowan Dam project . It should not be considered .In fact without a NSW budget commitment it cannot even be considered a government commitment.

An item which should be in the Namoi RWS is the full funding for a replacement pipeline from the existing Dungowan Dam to Chaffey Dam and the full funding for bringing the existing Dungowan Dam to the appropriate standard. This is estimated to cost around 150 – 200 million dollars and should be funded considering the NSW government was willing to spend 600million dollars on the ineffective proposed new dam.

I support Actions 1.1, 1.2,and 1.7

I support Action 1.3. Adopt a stronger focus on water efficiency and demand management for towns. This should be a high priority for the Namoi RWS as all towns need an Integrated Water Cycle Management Plan. There is a great opportunity in Tamworth to assist in the education of the public about the value and sustainable use of water. I am a member of a Tamworth group which has this focus. TRC has excellent information and incentives on water saving devices for citizens which we promote when possible. TRC's success in being able to keep Tamworth's water use at the same level over recent time in spite of an increasing population is to be applauded and the example could perhaps be followed by other towns.

I support Action 1.4. Progress advanced water treatment facilities for industries reliant on town water supplies. This is essential for Tamworth as almost 50% of Tamworth's water allocation is used by industry. It must be the top priority for Tamworth.

Action 1.6 I do not support the pipeline from Namoi Valley to Tamworth with an increase reserve nor do I support a pipeline from the Manning Valley to the Peel Valley. I do not support the inter valley or intra valley diversion of water.

Action 1.6 I do support additional water treatment facilities particularly purified recycled water. This is a weather independent source of drinking water and is already used in many places around the world such as Singapore , London and Perth WA. Orange NSW uses water obtained from purifed recycled storm water. Each Water Facility would have some unique requirements because of features such as hydrology and geography . Acceptance of purifed recycled water for drinking is increasing as people see the need for it and many people have travelled and worked in cities where it is the norm. Tamworth is well placed to have research carried out on purified recycled water as there is research already being undertaken for industrial use of recycled water. Funding for the continuation of the research on industrial use of recycled water is needed. Recycled water for industrial, domestic and drinking purposes will be essential in the near future for all towns in the Namoi Valley.

To ensure that everyone is aware of the necessity and the potability of purified recycled water, education programs will be essential and should be given a high priority for Namoi Valley communities in the RWS. A mobile purified water recycling unit to tour regional communities should be funded so that people can drink the water and see for themselves that it is safe.

Research should be done to see what useful products can be ‘mined' from the waste products of the water recycling process. This is being done in Europe where phosphorus is one of the products extracted and used.(UNESCO…Water Reuse Within a Circular Economy Context…report.)

Tamworth is not increasing water use in line with an increasing population . This has not been rewarded in any way and the saved water is then sold to another customer. Funding for further research into education about and research into purified water recycling and ‘mining' byproducts could be such a reward and an incentive for other towns to do the same.

NSW needs to promptly put the appropriate standards in place for all types of recycled water .

Priority 2. Supporting a growing regional community under a more variable and uncertain future climate

I support Actions 2.3, 2.9 and 2.10 (see above) :Aboriginal community outcomes.

I support Actions 2.1, 2.2,2.4,2.5 Increased transparent information and improved modelling are needed.

Actions 2.6 and 2.7 I support as these investigations will result in more knowledge of the management of Peel Water use.

Action 2.8. I do not support

Action 2.11. I support this action which should have top priority for improving water demand in agriculture. Regenerative Agricultural Methods result in healthier soils as well as reducing water needs. Education of stakeholders will also be required.

Action 2.12 I support this action. Groundwater risk management should have a high priority.

Action 2.13. The NSW Groundwater Strategy will have to be finalised before this action can be prioritised .

Action 2.14. This action must Not include the gas industry, in the Namoi Valley. CSG is not a transition fuel. Nor should new water intensive industries be included in this action. Otherwise I support sustainable new industries for a transitioning and sustainable economy.

Priority 3. Improving the health and resilience of water dependent ecosystems.

Actions 3.1 3.2 3.3 I support all of these actions . Action 3.2 allows for community participation which is beneficial for the environment and the volunteers and does have educational value and should be encouraged. Entities such as Land Care which organise these events are to be applauded.

Action 3.4 I do not support. The NSW Floodplain Harvesting Policy has abysmal flaws which have to be addressed before it is implemented. One example of these flaws is the allowance of 5 years of entitlement to be captured at once.

Actions 3.5, 3.6 3.7 I support

Action 3.8 Continue investment in groundwater science in the Namoi . This action should be a high priority because “gaps in our knowledge of groundwater dependent ecosystem water requirements, groundwater quality risks and and aquifer compaction risks” must be addressed and understood so that sustainable management practices can occur.

An action which is missing from this Namoi RWS in Priority 2 is : a Water Trigger as well as a Climate Trigger should be used in any new industry , alteration to an existing industry such as extending a coalmine, or project , or OAFs such as Whitehaven's Gorman North, before it is approved. This would mean that water intensive industries , water polluting projects and projects increasing Climate Change would not use water necessary for the wellbeing of people or the environment and would not further exacerbate the adverse impacts of Climate Change .We must protect the water , water sources and recharge areas we have.

Yours sincerely

[redacted]

From: [redacted]
Sent on: Thursday, September 15, 2022 10:43:29 AM
To: DPIE W Regional Water Strategies Mailbox <regionalwater.strategies@dpie.nsw.gov.au>
Subject: Dungowan Dam

I wish to address the Committee responsible for decision making 're the above mentioned dam:__

I wish to state my strong objection to any idea of a new Dam(at astronomical expense)

When one considers an ever increasing population, global warming (evaporation from dams,) very unreliable rainfall when may have very long droughts . The time has come when we must reserve every litre of water by recycling and purifying what precious water we have.
I visited water recycling in Surrey in UK in 1958 in Surrey, and there are many around the World
Please serious consideration to conserving and recycling
Sincerely
[redacted]

From: [redacted]
Sent: Sunday, 18 September 2022 7:45 AM
To: [redacted]
Subject: Namoi Regional Water Submission

Dear [redacted],

Attached is my submission to the survey in relation to the Namoi Regional Water Submission. I must thank you and the department for your public engagement and consultation during this survey - meeting in Manilla 12/9/'22 which I attended - and trust that this continues as we move forward. There are many avenues to be addressed and I may not have given sufficient depth to every one of them in using a broad-brush approach, but hopefully provided food for thought and further discussion material.

Once again I thank you for providing the opportunity for public input and discussion.

Best regards [redacted] [redacted]

Namoi Region Water Strategy – Tamworth City.

(Murray Darling Basin)

In relation to the Namoi Regional Water supply one must consider the impact – both positive and negative – on the entire length of the Murray Darling river system; what affects do changes in the Namoi Region have on areas downstream and, vice versa, where it is determined that changes to the water sharing system are required in the lower regions of the Murray Darling, the affects that are encountered in the Namoi Region.

Further, it is necessary – as part of the environmental aspects of this exercise - to compare the "natural historical environmental impact/s" of the unrestricted flow of the river **prior to** the impact of and **after** water conservation methods/devices (dams, weirs, barrages, etc.) were progressively introduced over time.

Tamworth City Water requirements.

Comment must be made on the earlier proposal to install a weir, pumping equipment and applicable pipeline at the "Blue Hole" location on the Namoi River. During the recent, severe, drought the Namoi river was all but dry with natural (no flow) and imposed pumping restrictions: the Manilla River was still able to flow, albeit with imposed restrictions and due to the water stored in Split Rock Dam. Given the perilously low and still declining level of water in Split Rock Dam it was fortunate that rain did eventuate. With both Manilla and Barraba towns requiring restricted basic allowances of supply there was no ability to supply water outwith both towns. Water was in fact being drawn from Manilla and delivered via road tanker trucks to Tamworth until this illicit activity was stopped.

As no one has, to date, been able to "make-it-rain" and /or determine when that rain can be "turned on or off" it is more than impractical to suggest the Blue Hole weir, pumping facility/s and 20K's approx., of pipeline -of sufficient capacity to cater for "high-flow" river draw off and transfer between the Blue Hole weir and Split Rock Dam - would be a practical and cost effective solution to cater for Tamworth City's requirements. It was more than gratifying to hear that this proposal was withdrawn. One hopes and trusts that this item remains permanently terminated.

Ground Water Supply.

It is generally accepted and, as such borne out by historical fact, that there are insufficient underground aquifers in the surrounding Manilla district other than those being suitable for stock and domestic water farm needs. There are exceptions in quantities of water available, but many such bore supplies that do exist have proven severely lacking in yield during sustained dry periods as ground water levels drop further - not just during the last drought.

As stated at the Manilla meeting, (7/9/22) it would be a costly exercise to completely "map" the underground water supply aquifers and given the prevailing ground composition, of which knowledge and practical experience informs us, this could hardly at this stage be justified. However, the opportunity cost of lost income for **not** having an adequate water supply for already established business' in the Tamworth Region - Industrial, abattoirs, poultry farms, processing plants, general & irrigation farms, health practitioners, retail business'., etc. – along with the

potential costs of bulk water transport –road, rail where possible – into the Region would be considerable and I surmise that a determination of such costs would prove a necessary balancing factor in what expenditure would be required in exploring various contingency alternatives necessary to alleviate the inevitable financial stress outcome of business' having to suspend operations. The cost of Government subsidies/financial assistance, potentially required to overcome and assist in minimising any such financial stress, could and must be included in this exercise.

Piping from river sources.

Sourcing water from Keepit Dam to pump to Tamworth, unless from creeks/sources - not already flowing into Keepit but which can be redirected to do so other than just during wet periods of surface flow- will be of insufficient benefit; Keepit relying only on inflow from the Namoi river and Manilla river will not suffice. Catchment from the Peel River and, perhaps from creek/catchment areas to the east of Gunnedah may well be considered as sources, but will require captive/storage facilities to be effective. Exploration and costing of the above may well be of value; there may even be additional benefits by way of flood mitigation in the Gunnedah locality.

Coastal eastern flowing rivers which have been suggested, on several occasions in the past, as potential sources for the diversion of water inland. Serious exploration of such concepts should be conducted to ascertain the feasibility and reality potential of this to determine water quantities available without distress to downstream users.

Tamworth Regional Council growth potential.

The anecdotal growth potential of Tamworth Region has been promulgated, to a degree, for some time. The reality of this intent being expounded sans public discussion or input. One of the main, if not thee main factor, is the procurement of water. Better, ever more degrees of efficiency in the use and application of water be that in industry, domestic use, agriculture or whatever will assist to a point; recycling of water being among that mix, but a basic source of quality raw water is still required. A new Dungowan dam, which will come at a considerable cost, is/would be a partial answer to this dilemma. It is worthy of note, however, that if a new dam does not eventuate, the existing dam, as it is, requires considerable costly remedial work and gains no increased storage capacity, therefore, more water has to be sourced from other means. This, in turn, raises yet another cost comparison; that being the cost of building the new dam versus the cost of remedial work to the existing dam and no new dam plus the cost of the procurement of the additional water required!

Best regards [redacted]