Submission to the 2026 NSW connectivity analysis

By:

Gwydir Valley Irrigators Association Inc

May 2026

making every drop count

Contents

1 Introduction

The Gwydir Valley Irrigators Association (GVIA) is the representative body for water entitlement holders in the Gwydir Valley and welcome the opportunity to provide our feedback on the 2026 NSW connectivity analysis from the perspective of our region.

This document aims to represent the concerns, views and experiences of our members and the community. Each member reserves the right to express their own opinion and is entitled to make their own submission.

The barrage of water reform through threats of rule changes for connectivity, Basin Plan and Water Sharing Plan reviews, and minimum inflow reviews are undermining the confidence of the industry, and continuously eroding access to water entitlements with no clearly articulated objectives or environmental metrics. The cumulative impacts of these endless reforms, particularly in the last two years are being ignored by government yet are significantly impacting industry viability and community wellbeing.

The GVIA and our members, are members of the NSW Irrigators Council and National Irrigators Council and we generally support the submissions made by those organisations.

Thank you for this opportunity to provide our input and perspective.

2 Recommendations

1. ***NSW government stop pursuing the concept of connectivity in isolation from the MDBA and Queensland.***
2. **That the NSW Government terminate the Northern Basin Connectivity Program.**
3. ***The GVIA support the MDBA position that 320GL water recovery in the Northern Basin is sufficient to satisfy the Environmentally Sustainable Level of Take (ESLT) requirements of the Water Act.***
4. ***In addition to recommendation 1, the NSW government stop any consideration of changes associated with connectivity in the Barwon Darling River until the following have been completed;***
    a. ***Objectives are clearly stated***
    b. ***A regulatory impact statement is completed***
    c. ***The model limitations with regard Held Environmental Water and Queensland inflows are updated.***
    d. ***A qualitative and quantitative analysis of ecological outcomes are completed based on updated model outputs.***
    e. ***A full cost benefit analysis is completed***
    f. ***A comprehensive socio-economic assessment of impacts are completed.***
5. **No changes associated with connectivity in the Barwon Darling are considered until there is a comprehensive audit of how environmental water is utilised in NSW and Queensland. This should be complemented by an assessment of adjustments to deliver additional benefits if needed.**
6. ***The NSW government stop any consideration of changes associated with connectivity in the Barwon Darling River until the models have been enhanced to represent the critical limitations as detailed in the Hydrologic modelling assessments[1].***
7. ***If the NSW government decide that they need additional water to create connectivity in the Barwon Darling, they must purchase their requirement on***

[1] Analysis of the Connectivity Expert Panel Recommendations:

the open market. We will not accept rule changes as they represent compulsory acquisition.

8. ***We see any proposed changes such as connectivity reforms, operating rule changes, or structural reconfiguration as changes in Government policy.***
9. ***Any water purchased from the northern Basin should focus only on demonstrated environmental benefits that would accrue from this water purchase.***
10. ***Prior to any consideration of changes associated with connectivity there must be a comprehensive independent cost benefit analysis of any options proposed by government.***
11. ***Before any proposals are considered for river connectivity in the ephemeral northern basin there must be a comprehensive independent assessment of the socio-economic impacts on specific businesses in each of the valleys.***
12. ***A comprehensive compensation framework must be developed and transparently shared with industry prior to any connectivity decision by cabinet.***
    a. ***This must provide for individual impact assessment (including reliability impacts) and compensation reflecting actual loss of entitlement value, not valley-average calculations.***
13. ***No decisions on possible options for connectivity should be made until the model limitations are addressed and a quantitative and qualitive assessment is made on possible benefits of proposals.***
14. ***Any consideration of connectivity must acknowledge that flows in northern tributaries are highly connected to episodic rainfall events, and therefore there is limited ability to break up drought induced extended cease-to-flow periods.***

3 Summary

Water recovery in the northern basin and specifically the Gwydir has had significant impacts since 1996[2] when the Environmental Contingency Allowance was established. The recovery of water has continued with the last significant reduction the licencing of Floodplain harvesting which saw a reduction of 52,900 megalitres, an average 30% reduction. The licences were implemented in August 2022. The full impacts of this reform are yet to be experienced by members and the benefits to the environment from an additional 100,000ML of inflows are yet to be seen.

The reform over the last 30 years means that we are not only over recovered under the Basin Plan, but we are also well under CAP. We have done our part, now it is governments role to maximise the utilisation of the over 75% of river flows that are for the environment to deliver outcomes including connectivity.

The health of the Barwon Darling is a management issue not a volumetric issue, while ever government fails to address basic infrastructure reform these problems will continue. Ironically the infrastructure reform would be significantly more cost effective than the destruction of northern basin business and communities.

[2] Gwydir Valley Irrigators Association Inc - History of Water Reform

Of significant concern is why is the NSW government pursuing connectivity when the responsibility for connectivity lies with the Murray Darling Basin Authority (MDBA) who are currently reviewing the Basin Plan. Critically this NSW analysis is ignoring the inflows from Queensland, which contribute approximately 40% of inflows into the Barwon Darling River. The analysis also fails to account for the impacts of Held Environmental Water to flows in the Barwon Darling.

The MDBA Basin Plan review discussion paper and sustainable rivers audit and other MDBA reports all confirm that limitations to achieving environmental outcomes are not flow related. We support this finding, which confirms that there is not a need for any further water recovery at a basin scale and more importantly at a northern NSW basin scale.

In addition, we agree with the MDBA statement that "*The MDBA maintains that 320 GL water recovery in the Northern Basin is sufficient to satisfy the Environmentally Sustainable Levels of Take (ESLT) requirements of the Water Act*[3][4]*.*"

In recent years we have seen a barrage of water reforms threatening the viability of the irrigation industry in northern NSW. Of most significant concern are changes to triggers at Menindee Lakes, recommendations for rule changes from the NSW Connectivity Panel report or from the Natural Resource Commission (NRC) review of Water Sharing Plans (WSP). The lack of appropriate socio-economic assessments, explanation of environmental metrics expected or mechanism to monitor any potential achievement of outcomes is unacceptable.

Rule changes are a form of compulsory acquisition in direct conflict with property rights; which is neither equitable nor appropriate in our contemporary water management system. The fact that the NSW department in considering them as the only option is alarming. Rule changes are a fundamental attack on the property right that exists with water and is in direct opposition to the Murray-Darling Basin position that water should be acquired through market mechanisms from voluntary participants. The GVIA cannot support rules-based changes that have a negative impact on reliability or allocations of existing water entitlement holders, including those held by the CEWH. If the NSW government, believes there is a need for additional water for their connectivity proposals they must purchase it on the open market from willing sellers.

The information presented by the NSW government in their analysis of the connectivity panel proposals does not provide a satisfactory assessment of the proposals. There are significant limitations to the models which lower the modelled base case flows into and along the Barwon-Darling River, and therefore also lower the flows modelled in each scenario and under-estimate the achievement of the environmental flow requirements set out in long term water plans. This means that all the additional analysis has been completed utilising modelled outcomes that have significant uncertainties associated with them. Before any further analysis, models, at a minimum, need to be updated to represent Held Environmental Water and Queensland inflows more appropriately to reduce some of the uncertainty that currently exists.

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[3] BACK POCKET BRIEF – SCIENCE ON 450GL RECOVERY DISTRIBUTION

[4] MDBA Information Request: Productivity Commission Murray–Darling Basin Plan: Implementation Review 2023

The NSW government better regulation principles are designed to improve the quality of regulation, by ensuring the decision maker is fully informed when considering regulatory proposals. Decision makers will not be fully informed by the information developed on connectivity by the NSW water department to date.

The economic assessments presented fall well short of that required in any form of a regulatory impact assessment. There is a lack of detailed, transparent assessment of the cost benefit including a quantitative and qualitative assessment of proposed improvements to environmental indicators.

There has been no socio-economic assessment of impacts to the community, this is unacceptable given the extreme nature of the proposals. It is essential that there is a comprehensive socio-economic assessment (as completed in the Northern Basin review) before any further steps are made.

4 Responsibility for connectivity in Barwon Darling

The proposals associated with the NSW connectivity program are not the responsibility of NSW. Any attempt to make any changes in NSW without consideration of contributions from Queensland and from Held Environmental Water (HEW) are comprehensively flawed.

All the proposals analysed by the NSW government ignore the significant contribution of both Queensland inflows (15% of basin, potentially 40% or more of inflows into the Barwon) and Held Environmental Water from the northern tributaries. This means that all the assumptions, proposals and options presented are completely unsound and must be discarded.

The responsibility for connectivity in the northern basin is with the Murray Darling Basin Authority. The MDBA should conduct a proper diagnosis of the status of the Barwon Darling and then develop a detailed problem statement. Within this we would expect an assessment of how HEW is or could be utilised to deliver improved connectivity. We would also expect recognition of inflows from Queensland and a detailed options analysis that recognises the nature of the northern basin ecosystem.

Information[5] available to the GVIA clearly states; "*options to improve flows need to be targeted and realistic.*" *"It is not possible through management to maintain a constantly flowing river. We also know that we have limited ability to break up drought induced extended cease-to-flow periods.*" Options presented in the draft strategy "*are not intended to;*

- *Reduce the overall amount of water being taken out of rivers, consistent with the sustainable diversion limits set by the basin plan*
- *Move productive use of water from one valley to another, nor from the northern to the southern basin."*

Coupled with this is the fact that the MDBA still support the fact that the 320GL water recovery volume in the northern Basin satisfies the Water Act 2007 requirements of an Environmentally Sustainable Level of Take[6].

[5] DPE.SO52.1931.0734

[6] MDBA response to Productivity Commission Information Request 2023

A key purpose of the Basin Plan is to manage sustainable take and flows across state borders, we have achieved this, at significant cost to our community. If any government want to improve connectivity in the Barwon Darling, then they need to manage the over 75% of flows that are for the environment to deliver whatever objective they have. The current NSW connectivity proposals are regressive showing disregard for the significant achievements of the Basin Plan.

Recommendation

1. **NSW government stop pursuing the concept of connectivity in isolation from the MDBA and Queensland.**
2. **That the NSW Government terminate the Northern Basin Connectivity Program.**
3. ***The GVIA support the MDBA position that 320GL water recovery in the Northern Basin is sufficient to satisfy the Environmentally Sustainable Level of Take (ESLT) requirements of the Water Act.***

5 Process and Consultation

We highlight the NSW Governments' Better Regulation principles[7], whereby. "*All new and amending regulatory proposals, submitted for the approval of Cabinet or the Executive Council, must demonstrate the application of the Better Regulation principles.*"

The principles are designed to improve the quality of regulation, by ensuring the decision maker is fully informed when considering regulatory proposals. It also aims to ensure proposals should be - required, reasonable and responsive.

We are not confident that given the lack of a Regulatory Impact Statement, limitations of models, and an absence of any formal cost benefit analysis that decision makers will be fully informed. In addition, we cannot accept that proposals provided to us are required, reasonable or responsive as there is no articulation of the objective and no evidence based problem statement.

We believe the NSW water department have failed to satisfactorily meet the first four principles under the better regulation principles. None of the information provided show that benefits outweigh costs. The analysis of potential benefits lacks any qualitative or quantitative analysis, rather is has been expressed as likely ecological outcomes, and is based on model outputs that do not accurately demonstrate potential achievement of the environmental flow requirements. There is not clarity of the objectives, there is no understanding of the economic impacts (either for the licence holder or socio-economic impacts for communities) for any of the proposals individually or combined. Given there is no clearly defined objective there is no means to consider if government action would be effective or proportional.

Recommendation

4. **In addition to recommendation 1, the NSW government stop any consideration of changes associated with connectivity in the Barwon Darling River until the following have been completed;**
    a. **Objectives are clearly stated**

[7] TPP19-01 - Guide to Better Regulation.pdf

b. **A regulatory impact statement is completed**
c. **The model limitations with regard Held Environmental Water and Queensland inflows are updated.**
d. **A qualitative and quantitative analysis of ecological outcomes are completed based on updated model outputs.**
e. **A full cost benefit analysis is completed**
f. **A comprehensive socio-economic assessment of impacts is completed.**

5.1 Problem definition against current status

Sound policy development process requires a clear evidence based problem statement. The proposals put forward by the panel overlooked the benefits of significant changes in recent years. Changes which include;

- Raising the A-class pumping threshold in the Barwon Darling
- Establishing individual daily extraction components in the Barwon Darling
- Resumption of Flow restrictions on the Barwon Darling
- Protecting licenced environmental water via active management in the Barwon Darling

Today nearly 94% of flows in the Barwon Darling are for environmental purposes.

In addition, the panel disregarded benefits of the following rules in Water Sharing Plans;

- Licencing of Floodplain Harvesting
- B and C class pumping restrictions in the Barwon Darling,
- End of System flows in the Namoi and Barder Rivers.

The panel also paid no attention to the benefit that will be achieved through the completion of the "Bridging the Gap" in the Namoi and Border Rivers under the MDBP.

Any proposal that fails to recognise such significant inflows has failed to appropriately complete quantitative or qualitative analysis of all available data. As such should not be used to inform any decisions of government.

The original Basin Plan included shared water recovery in the northern basin to meet the needs of the Barwon Darling system. Northern Valleys have now essentially completed water recovery and have achieved SDL targets. We believe there needs to be time to demonstrate how this water is being used by the environmental water holders to deliver flow and environmental outcomes in the Barwon Darling. Modelling by NSW government has not accounted for this significant water volume.

Extraction in the Barwon-Darling represents 6% of long-term average annual extractions. The long-term annual extraction limit (LTAAEL) in the Barwon-Darling is 214GL, with water for the environment representing 94% of flows.[8] Given this already low level of extractions, it is difficult to see how additional water recovery would make any material difference to downstream flows.

No changes should be considered until there has been a comprehensive audit of environmental water utilisation. This is critical as Held Environmental Water holdings are

[8] Water Sharing Plan for the Barwon-Darling Unregulated and Alluvial Water Sources 2012.

significant, they hold a third of all entitlement in the Gwydir (approx. 231,000ML) plus the additional inflows from licencing floodplain harvesting entitlement. There is history of HEW being used to create connectivity, environmental releases in 2025-2026, 2022-2023 and in 2018-2019 have been used for connectivity. These volumes were stored in Copeton Dam for years before being utilised, provided flows that would not naturally have been possible.

Recommendation

5. **No changes associated with connectivity in the Barwon Darling are considered until there is a comprehensive audit of how environmental water is utilised in NSW and Queensland. This should be complemented by an assessment of adjustments to deliver additional benefits if needed.**

6 Model limitations

Model limitations have been clearly outlined in the NSW department Analysis of the Connectivity Expert Panel Recommendations: Hydrologic modelling assessments[9]. The report notes the following:

"There are some processes that are currently occurring in the northern Basin that are relevant to understanding the existing level of connectivity between the main tributary river systems and the Barwon-Darling River that are not yet represented in river system models.

This includes:

- *water recovery under the Basin Plan and its use to achieve environmental outcomes*
- *any flows reaching or returning to rivers as a result of the licensing[10] of floodplain harvesting or any other restrictions applied in model scenarios*
- *the protection of held environmental water flowing in the Barwon-Darling and lower Macquarie under the active management process*
- *representation and protection of additional flows from Queensland arising from water recovery under the Basin Plan.*

The absence of model enhancements to represent these processes will generally lower the modelled base case flows into and along the Barwon-Darling River, and therefore also lower the flows modelled in each scenario and under-estimate the achievement of the environmental flow requirements set out in long term water plans."

The report goes on in the 'statement on connectivity modelling reliability' to say *"Model results have not been bias-corrected or post-processed to remove known biases. Model results and subsequent analyses should be interpreted with caution, including by considering model limitations and biases.*"

[9] Analysis of the Connectivity Expert Panel Recommendations:

[10] Licensing of floodplain harvesting is yet to occur in the Namoi Valley and is not included in the model used for this assessment. Instead, floodplain harvesting is represented at existing levels, unrestricted by licensing

The report also highlights that there are issues with representing return flows to the system from floodplain harvesting restriction, and the representation of held environmental water. With regard held environmental water the report states; "*It is likely that a full held environmental water representation in the models would indicate improved downstream flow outcomes relative to the base case. This means that the models are likely to overestimate the quantum of intervention required to achieve specific flow targets.*" Finally, "*Active management to protect additional environmental flows in the Barwon-Darling has not been modelled*."

Until such time that all these significant gaps have be appropriately considered in the models we believe it means the work completed by the department is not presenting a realistic assessment. Any recommendations or proposal that are unable to account for such significant inflows is not presenting a complete quantitative or qualitative analysis of all available data. As such should not be used to inform any decisions of government.

Recommendation

6. ***The NSW government stop any consideration of changes associated with connectivity in the Barwon Darling River until the models have been enhanced to represent the critical limitations as detailed in the Hydrologic modelling assessments[11].***

7 Alternatives to Rule Changes

Fundamentally the GVIA support the MDBA position that the recovery of 320GL in the Northern Basin is sufficient to satisfy the ELST requirements under the Water Act 2007. The Gwydir is already 5,000ML over-recovered based on our SDL, meaning we satisfy the Environmentally Sustainable Level of Take (ESLT) requirements of the Water Act. The GVIA therefore does not support further water recovery in the Northern Basin beyond the volume already contemplated under the Act.

The current NSW Government options under consideration rely solely on rules-based changes, having not considered any alternatives such as acquiring water through the market.

We cannot accept rule changes as a means to acquire additional environmental water. Rules-based changes are a form of compulsory acquisition, too frequently without compensation, it is neither equitable nor appropriate in our contemporary water management system. Rule changes are a fundamental attack the property right that exists with water and is in direct opposition to the Murray-Darling Basin position that water should be acquired through market mechanisms from voluntary participants.

Our membership, both large and small recognise water entitlements as statutory property rights. They are defined and enforceable under legislation, transferable and tradeable, recognised as assets on balance sheets, used to secure finance, and purchased and sold in regulated markets. These principles must be acknowledged to be the hallmarks of property rights and be treated as such by regulators and policy makers.

[11] Analysis of the Connectivity Expert Panel Recommendations:

Maintaining the integrity and confidence of the water property right framework is essential to all entitlement holders (agricultural, environmental, urban and others), and the water management framework, as envisioned by the National Water Initiative (NWI).

- Any reduction to the reliability of water access on an entitlement, as a result of changes to government policy, is fully compensable (as per Clause 50 of the National Water Initiative). We cannot accept that small impacts are immaterial, or non-compensable. The cumulative impacts of smaller reductions are significant.
- We see any proposed changes such as connectivity reforms, operating rule changes, or structural reconfiguration as changes in Government policy.
- Government must implement the principles for water recovery, which includes consideration of all available options and assessment of socio-economic costs (as per Clause 79ii the National Water Initiative). Consideration of all available options must include non-water options such as infrastructure and complementary measures.

The GVIA cannot support rules-based changes that have a negative impact on reliability or allocations of existing water entitlement holders, including those held by the CEWH.

We do not believe that the full reliability impacts to water users have been appropriately factored into the NSW water department connectivity assessment, nor does there seem to have been a detailed assessment of how impacts will be avoided, managed or funded by government.

As per the above principles, the full extent and nature of these impacts must be understood, communicated to impacted stakeholders, and a pathway forward to avoid or manage these impacts worked through.

If any government, believes there is a need for additional water for any environmental purposes they must purchase it on the open market from willing sellers.

Recommendations

7. ***If the NSW government decide that they need additional water to create connectivity in the Barwon Darling, they must purchase their requirement on the open market. We will not accept rule changes as they represent compulsory acquisition.***
8. ***We see any proposed changes such as connectivity reforms, operating rule changes, or structural reconfiguration as changes in Government policy.***
9. ***Any water purchased from the northern Basin should focus only on demonstrated environmental benefits that would accrue from this water purchase.***

7.1 Compensation

At the Narrabri engagement session in April 2026, DCCEEW representatives acknowledged that compensation costs have not been modelled as part of the current analysis. Since then, the department has initiated work on compensation methodology. This is an extraordinary admission for a reform process targeting entitlements with an estimated present value of approximately $2.88 billion in the Gwydir valley alone, and over $7.8 billion in total. This is a significant change in government policy requiring full compensation.

Recommendation

10. ***A comprehensive compensation framework must be developed and transparently shared with industry prior to any connectivity decision by cabinet.***
    a. ***This must provide for individual impact assessment (including reliability impacts) and compensation reflecting actual loss of entitlement value, not valley-average calculations.***

8 Economic Assessments

The economic analysis of the recommendations has not been completed with a satisfactory level of detail to enable any informed decision making. The Centre for International Economics analysis[12] is essentially a scoping study with no cost benefit analysis or comprehensive socio-economic assessments. Additionally, it does not consider impacts on business viability, impacts on suppliers and community and does not outline the significant differences in local impacts that would arise from alternative approaches to implementation.

This economic impact assessment estimates the cost to irrigators using the temporary water trade price (water allocation assignment trade) which is inappropriate given the insignificant number of trades that are not between related parties with a zero cost basis. Water trading in the supplementary licence classes of the Northern Basin is extremely thin and typically between related parties. While floodplain harvesting cannot be temporarily traded. The information in this report is not satisfactory to inform any regulatory decision associated with any of the panel recommendations.

There is yet to be a comprehensive cost benefit analysis completed for any of the individual proposals from the panel, or for any combination of proposals. A cost benefit analysis must include a determination of the initial or base entitlement value, assess reduction in water allocations and reliability, and estimate the reduction in entitlement value.

In addition, there should be an assessment of the viability and cost to farming businesses including; capital investment in irrigation infrastructure (on-farm storage, channels, automation systems and metering equipment), employment, and the sunk costs associated with production systems built around existing entitlement reliability expectations.

Recommendation

11. ***Prior to any consideration of changes associated with connectivity there must be a comprehensive independent cost benefit analysis of any options proposed by government.***

8.1 Socio-economic analysis is critical

There has been no socio-economic analysis considered for any of the proposals individually or for any combinations. This is a critical missing link. Water recoveries have had an enormous impact on communities as shown in the assessments completed as part of the Northern basin review.

[12] Report re

- The socio-economic impact of environmental water recovery in the Gwydir was significant. Water reforms trigger ripple effects across communities. Less water for farming means fewer jobs, lower local spending, smaller schools, reduced services, and declining community participation, the 'multiplier effect'.
- The Northern Review[13] identified that not only were there substantial reductions in population and employment but that there were notable declines in the Socio-Economic Indexes for Areas (SEIFA). Moree alone saw the following declines.

SEIFA	2006	2011
education and occupation	5	↓ to 3
advantage and disadvantage	5	↓ to 3
Economic resources	4	↓ to 2

The impacts of past water reform continue to impact communities such as Moree, where declines in education, occupation, disadvantage and economic resources are contributing to the social problems we are experiencing today.

The regional impacts of any of the panel's proposals in irrigation dependent communities will be enormous yet have not been estimated. Before any proposals are considered for river connectivity in the ephemeral northern basin there must be a comprehensive independent assessment of the socio-economic impacts on specific businesses in each of the valleys. Assessments must drill down to a Local Government Area to appropriately identify the critical impacts of proposals.

Recommendation

12. ***Before any proposals are considered for river connectivity in the ephemeral northern basin there must be a comprehensive independent assessment of the socio-economic impacts on specific businesses in each of the valleys.***

9 No clearly defined environmental benefits

The Assessment of Ecological Outcomes of Flow Changes[14] presents the findings of a Technical Advisory Panel (TAP) using a semi-quantitative expert scoring framework. This assessment gives a feeling of possible benefits "*an assessment of likely ecological outcomes of the predicted hydrological changes.*" Not a qualitative or quantitative assessment of any of the benefits of proposals as would be required to consider such significant proposals.

The TAP scored likely ecological outcomes across six scenarios against three impact mechanisms (water quality, habitat, connectivity) and four ecological components (native fish, other aquatic fauna, waterbirds, instream vegetation). These assessments are flawed due to the significant limitations of the model which was used to "predict hydrological changes". The

[13] Northern Basin Review - Technical overview of the socioeconomic analysis

[14] Analysis of the Connectivity Expert Panel recommendations – Attachment 3: Assessment of ecological outcomes of flow changes

department recognises that model limitations would generally lower the modelled base case flows into and along the Barwon-Darling River, and therefore also lower the flows modelled in each scenario and under-estimate the achievement of the environmental flow requirements set out in long term water plans.

The Marsden Jacob Associates non-market valuation report (March 2026)[15] attempts to determine the non-market values on a 40-year PV basis, they did this utilising the Discrete Choice Experiment drawn from Rolfe et al. (in submission, 2024). These estimates were based on the TAP's assessment of waterway improvements arising from the proposals from the panel. They range from 1.3% to 4.0% improvement depending on the option, but the relationship between these estimated improvement from the expert-scored river condition index and measurable outcomes for these species has not been demonstrated.

The willingness-to-pay coefficients were derived from a survey of NSW households, the majority of those surveyed would have no understanding of the significant outcomes achieved through the basin plan, not understanding of the direct linkage of flows to climatic conditions. For any such survey to be relevant the focus should have been on Northern Basin communities or irrigation-affected households. The report acknowledges the significant uncertainty of this approach.

Both these assessments have limits, together these limits are further exaggerated making the findings quite uncertain, and as such of questionable value. The findings should not be used to inform decision making given the significant limitations.

Recommendation

13. No decisions on possible options for connectivity should be made until the model limitations are addressed and a quantitative and qualitative assessment is made on possible benefits of proposals.

9.1 Flow targets not validated

The Environmental Watering Requirements (EWRs) only provide a theoretical amount of water needed, they were not ground truthed and historically are not achieved under without development flows. Despite these significant limitations of EWR's the panel determined specific flow targets for baseflow, small freshes, and large freshes presented as environmental water requirements (EWR's) derived from the Barwon-Darling Long Term Water Plan.

We find it inappropriate that the following statement is online on the NSW connectivity page. It assumes the critical dry condition triggers in the western regional water strategy are correct.

> *"While government options to improve connectivity are being finalised, temporary water restrictions may be used to protect the first flows after dry periods to meet critical human and environmental needs. If deemed necessary, these temporary water restrictions would be implemented using Section 324 of the Water Management Act 2000 and may be guided by the critical dry conditions triggers published in the Western Regional Water Strategy."*

There are no quantified ecological response functions linking specific flow changes to population or habitat outcomes for the target species most relevant to the reform's stated

[15] Non-market value of changes in river condition

justification; Murray cod, golden perch, and other species affected by the 2018-2019 fish deaths.

10 General Concerns

10.1 Recognition of natural system is lacking

Unfortunately, climatic conditions have been omitted as being one of the pressures, possibly the most important pressure contributing to the conversation on connectivity and cease to flow events in the northern basin. Recognising the direct linkage between climatic conditions and river flow is essential if we are to consider this topic on a scientific basis rather than a political basis.

The flows in northern tributaries are highly connected to episodic rainfall events, which means that when dry times are experienced the northern rivers will and have always ceased to flow. Extended cease-to-flow periods in the Barwon-Darling were consistently seen prior to regulation of northern tributaries and are part of the natural system, not indicators of regulatory failure.

The 1974 Water Resources of Darling[16] indicates that zero flow periods exceeding 250 days have been experienced at Walgett, Wilcannia and Menindee several times since records began. As demonstrated when the Barwon Darling ceased to flow for 362 days at both Wilcannia and Menindee from January 1902 to 1903.

The 1966 Water Resources of the Gwydir Valley by the Water Conservation and Irrigation Commission of NSW notes that extremely low rainfalls have frequently been seen since 1879. The rainfall from December 1901 to November 1902 was 6.42 inches (160.5 mm) which resulted in the lowest stream flows recorded in the valley. Low or zero flow is linked to rainfall, both at the location and upstream.

The impacts of upstream rainfall cannot be overstated. This is demonstrated in the data from Mungindi (Figure 1). There was severe drought in Queensland from 1991-1995, despite reasonable rainfall at Mungindi, as a result the Barwon still experienced zero flow days. One hundred years later, the message is the same if it doesn't rain the rivers will not flow.

Data from Mungindi, Moree and Wilcannia demonstrate the climatic linkage between rainfall and cease to flow.

16 https://publications.water.nsw.gov.au/watergroupjspui/bitstream/100/938/1/Water_Resources_of_the_Darling_Valley.pdf

Figure 1: Mungindi annual rainfall and zero flow day count

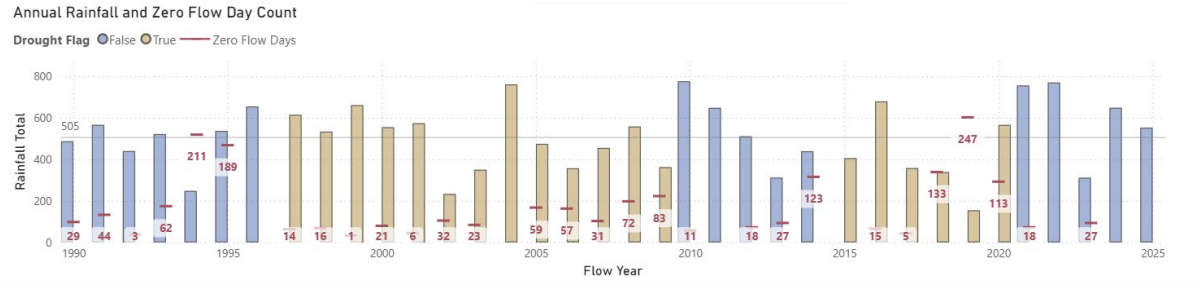


Figure 2: Moree annual rainfall and Mehi River zero flow day count

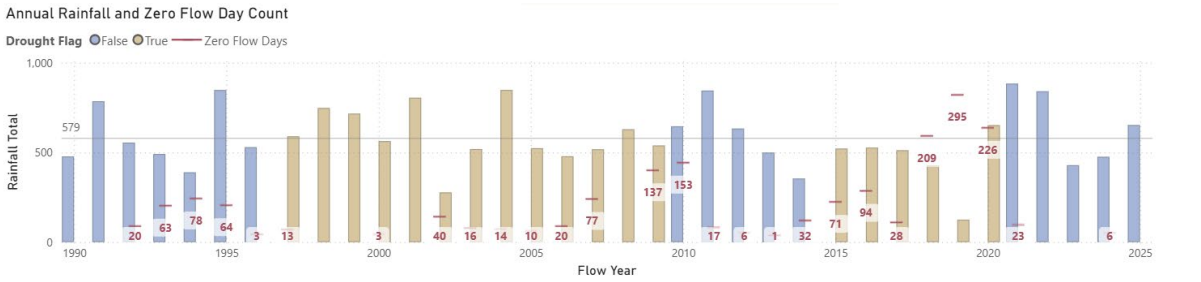
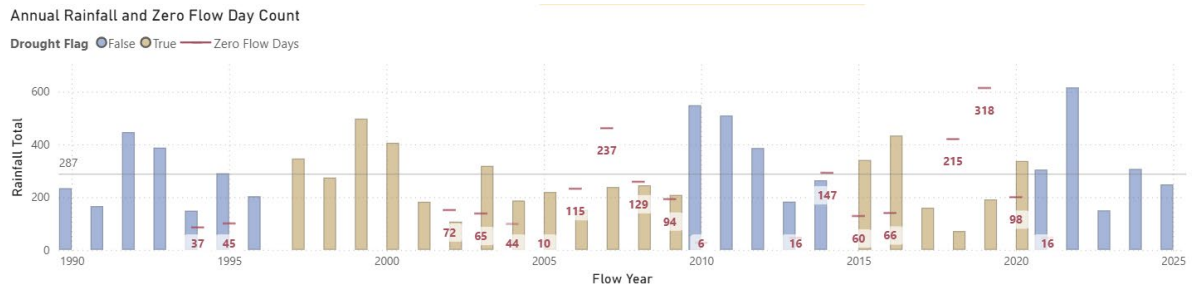


Figure 3: Wilcannia annual rainfall and zero flow day count



Source: WaterInsights and BOM.

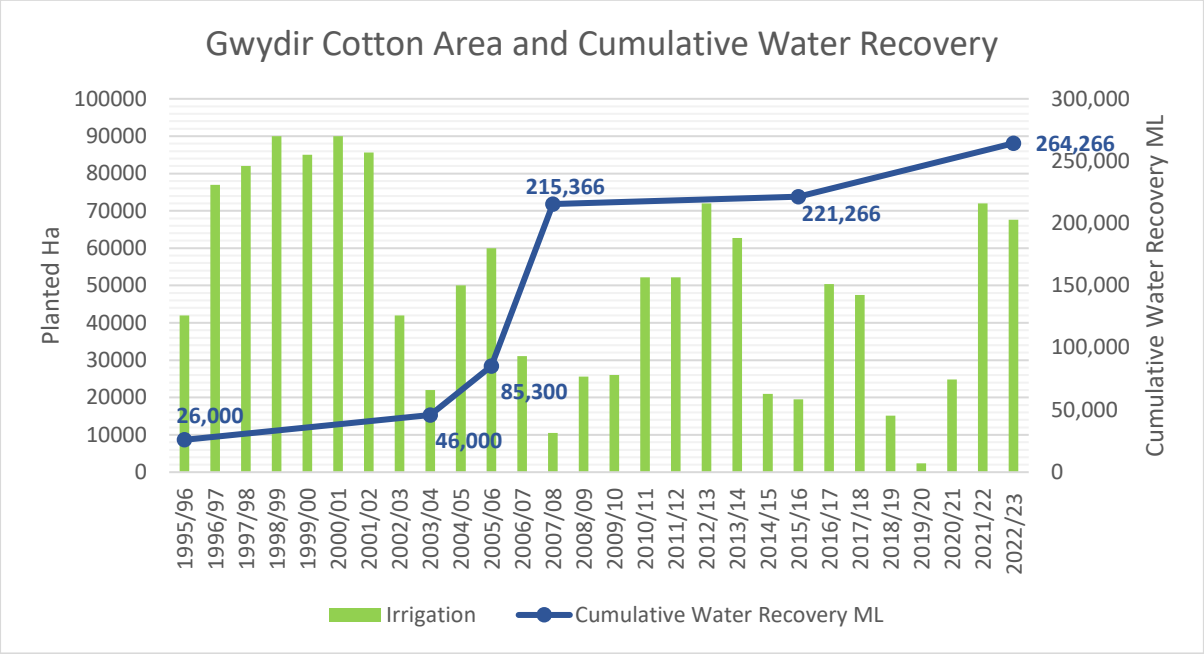
The ecological communities of northern basin rivers have evolved to depend on the cycle of wet and dry periods, episodic flows, and intermittent connectivity.

Given that extended dry periods are a natural and recurring characteristic, not an indicator of over-extraction then: upstream restrictions will have minimal or no impact, climate will continue to be the primary driver of severe low flows regardless of significant water reforms as already achieved, tighter triggers or any form of connectivity proposal.

A more appropriate policy response is building resilience to natural cycles; ensuring infrastructure is fit for purpose and supporting community to secure critical human needs while recognising the Barwon Darling will have extended periods of no flow. Connectivity cannot be achieved by regulatory measures premised on the false assumption that management can eliminate episodic drought.

Mapping climatic impacts against cumulative water recovery and production reaffirms the direct impacts of climate on not only river flow but also on the sustainability of communities who rely on irrigated agriculture. The information in figure 4 also details the significant volumes of water recovered under various reforms, this significant volume must be appropriately modelled to better inform proposals.

Figure 4: Cumulative water recovery and irrigated area in the Gwydir Valley.



Recommendation

14. Any consideration of connectivity must acknowledge that flows in northern tributaries are highly connected to episodic rainfall events, and therefore there is limited ability to break up drought induced extended cease-to-flow periods.

10.2 Consultation

Regional Communities (Consultation Standards) Bill 2024[17] requires consultation with regional communities if the consultation is "*primarily directed to, or primarily impacts on, the health, cultural, environmental, economic, educational or other well-being of persons in the regional community*", while the Regional Communities guide[18] states "*This Guide ensures that those who are affected by a decision are involved in the decision-making process*." The guide continues to define five principles that should guide community consultation practices. The principles are Meaningful, Transparent, Localised, Inclusive and Flexible.

We have been able to access the panel recommendations and the NSW government analysis of those recommendations, we thank the department for sharing information, especially that associated with the modelling of proposals. We, however, have not been included in the decision making process. To date we are unaware of what options will be presented to cabinet. Given the significant impacts any of the recommendations of the panel would have we find this inappropriate.

Meaningful consultation should in practice include;

[17] Regional Communities (Consultation Standards) Bill 2024

[18] Regional Communities Consultation Guide | NSW Government

- *Consultation activities have a clearly defined purpose and objectives that are shared with the public.*
- *The process is focused on achieving an outcome, but not one that is pre determined.*
- *Participants are provided with adequate time, background information and opportunities to participate in a meaningful way.*
- *Consultation activities and processes make it as easy as possible for community to participate and provide input.*
- *Genuinely listening to the community as part of the consultation, ensuring a diverse range of voices are heard.*

We would argue that we still do not have a defined purpose nor objectives. The process has not defined the intended outcome, and it is clearly apparent the there is a predetermined approach (implementation of rule changes aligned with the recommendations of the connectivity panel) to achieve the vague intention of "increased connectivity" although there is no definition of what that is.

Meaningful consultation requires that affected parties understand the complete proposal, what the genuine options are, and what the consequences for them specifically would be. There has been a lack of transparency on the disaggregated impacts, by licence class, valley, geographic position, and individual farm characteristics. Distribution of averages across valleys is not acceptable as the distribution of impacts will vary significantly by location and licence category.

There has also been no clarification of what options will be taken to cabinet for consideration, meaning we have not been involved in the decision making process. We find this unacceptable given the significant nature of the proposals

10.3 Connectivity environmental water account

The Connectivity Environmental Water Account (EWA) represents the most significant and least-assessed element of the panel's recommendations. The panel proposes that this EWA carry the highest security status in dam storage, meaning it would take precedence over all existing entitlements in terms of storage claims. The modelling documents acknowledge that the panel has not specified the volume, rules, or operational framework for this account.

A recommendation to create a highest-priority entitlement in an already fully utilised water sharing scheme, without specifying volume or governing rules, is not a basis for regulatory decision-making. Based on available modelling, the EWA storage reservation may be in the order of 128 GL across the relevant valleys. Holding this volume in reserve, would significantly reduce the water available for general security AWDs, the impacts on reliability will be significant, and must be fully recognised and incorporated into a cost benefit analysis.

11 Alternative options

Alternative options including doing nothing or purchasing water on the open market and fixing the significant infrastructure problems have not been considered.

II.I HEW responsibility to improve connectivity

There has been a lack of recognition of the role of Held Environmental Water (HEW) in connectivity. Without a comprehensive audit of how HEW is utilised it is inappropriate to make any changes. There is a need to investigate how existing environmental water could be use more effectively to deliver connectivity.

The Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin June 2013, (revised 2017 and 2019) states in Appendix A: Implementation Plan for Measures to Improve Environmental Outcomes in the Northern Murray-Darling Basin, that "*Queensland will work with NSW to develop a rigorous and transparent accounting method to calculate the contribution of held environmental water crossing the Queensland-NSW border and timing of contributions.*" and "*Accounting method supported by protocols and procedures for Queensland-to-NSW cross-border held environmental water will be in place and operating by end 2020.*" We believe this is important.

Given that the NSW models do not account for water from Queensland we feel there is an opportunity to enhance the protocols, procedures and transparency to improve understanding of the efficiency of use of not only HEW but all other water flowing naturally from Queensland into the Barwon Darling in NSW.

II.2 Infrastructure and management

Given that fish mortality events are being cited as the primary justification for the reform proposals focused on infrastructure or carp management should be the focus. The primary message from the Basin Plan review was that there isn't a need for more water, but that there is a need to manage environmental water more efficiently and effectively to deliver outcomes.

The fish deaths that occurred during the drought of 2018-2020 and the floods of 2023 are directly linked to water quality at Menindee Lakes. The water quality is directly linked to the infrastructure at the lakes, especially main weir and weir 32. Northern Basin Fish Strategy, that outlines a number of different options, including improving infrastructure, installation of fish screens, preventing cold water pollution, and managing invasive species. Until this infrastructure is upgraded to be fit for purpose, and complementary measures implemented the fish will continue to die, regardless of the flows.

In addition, the management of water at the lakes is not efficient because of these infrastructure problems. Infrastructure must be urgently upgraded, and management must adapt to more efficiently utilise water at Menindee

Improved water supply for critical human cannot be achieved without investment in infrastructure as well. Given that climate change and critical human needs are factored into existing water sharing arrangements, through water sharing plan, water allocations, and extraction limits, we need to support local councils to proactively utilise the water available to them as efficiently and effectively as possible.

To enhance critical human needs, local government must be supported to look at local solutions, including infrastructure (storage dams, weirs, pipelines, tanks), secondary supply sources, water recycling or desalination. This approach will help secure towns more reliable water when our rivers stop flowing due to drought. This is especially important in highly

variable ephemeral river systems as exist in the northern basin. It is not possible to ensure these rivers flow constantly.

If the NSW government determine to pursue anything further regarding connectivity, it must acknowledge many of the challenges in the Barwon Darling are infrastructure related. Addressing the infrastructure issues will significantly improve the health of the Barwon Darling and remove the need for any further changes to existing access for entitlement holders.

We believe it would be improper to pursue the concept of connectivity until infrastructure, carp management and the use of HEW have been completed or assessed.

12 About the GVIA

12.1 Our region

The Gwydir Valley Irrigators Association (GVIA) represents more than 450 water entitlement holders in the Gwydir Valley, centred around the town of Moree in North-West New South Wales. Our mission is to build a secure future for members, the environment and the Gwydir Valley community through irrigated agriculture.

The Moree Plains Shire region alone is highly dependent on agriculture and irrigated agriculture for economic activity contributing over 72% of the value of gross domestic product (cotton is around 60%), employing 20-30% of the population and accounting for almost 90% of exports from the Shire[19].

The 2011 agricultural census estimates that the total value of agricultural commodities for the Moree Plains Shire region was $911,951,079 up from $527,744,851 in the 2005-06 census. This is an estimated 7.83% of NSW's total agricultural production from a 1,040,021Ha principally used for agricultural crops[20].

The Gwydir is characterised as having low water reliability with most water held as general security water with a reliability of 36% (i.e. in the long-term just over a third of entitlement can be accessed). Supplementary water entitlement is somewhat more reliable with 55% but accounts for less than a quarter of the total volume. Groundwater reliability is considered 100% but there is less than 30,000ML available. Floodplain harvesting licences were issued in 2022, significantly reducing access for the region, and contribute almost a quarter of the water use in the region over the long term. However, access is episodic, in line with moderate to major floods.

The Gwydir has had more environmental water recovered than required by the Murray Darling Basin Authority modelling and legislation. There is an additional 5,000 megalitres of water owned by Government's above the legislated amount for our region[21].

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[19] Cotton Catchment Communities CRC Communities and People Series 2009

[20] 2010 2011 Agricultural Census Report – agdata cubes, 71210D0005-201011 Agricultural Commodities, Australia

[21] The Gwydir Valley has met the legislative requirements of the Murray Darling Basin Plan of 42,000 megalitres of LTDLE entitlement for local/instream environmental outcomes and a further 7,600

As a result of water reform, only approximately 19% of the total river flows are available for diversion for productive use[22]. This equates irrigators holding 575,000ML from regulated entitlement (high security, general security and supplementary water) and 28,000ML available from groundwater aquifers.

The reform was difficult as regional communities such as those of Collarenebri and Moree were forced to adjust to a region with less water, and less capacity to recover from droughts. The impacts of the reforms are still evident in these communities.

Changes in water availability either through climate or government policy has a direct impact on the productivity of the region and the local economy. Analysis by the Murray Darling Basin Authority highlighted this relationship during the northern review and revealed that for both Moree and Collarenebri social and economic indicators declined through 2001 to 2011 including education, economic resources and disadvantage, resulting in an estimated 200 jobs lost due to the implementation of the Basin Plan in the region[23]. We are currently seeing this impact play out with ongoing social issues in our region.

12.2 Our region's hydrology and geomorphology

The Gwydir River is an inland terminal river network classified as "distributary" network by the Murray Darling Basin Commission during water sharing plan development. The rivers become a series of branching channels that distribute flows across large areas especially during floods (MDBC, 2007a). This distribution of water represents the watercourse areas of Gwydir Wetlands. There are four parcels of land within the Gwydir Wetlands listed under the Ramsar Convention on Wetlands (MDBA, 2010c).

This natural geomorphology means the Gwydir River under natural conditions would have a very low ability to contribute to surrounding catchment inflows. The State of The Darling Interim Hydrology report puts the average percentage flow of the Darling River from the Gwydir River to be 12%, although updated estimates have this percentage between 8- 7% as reported in the Independent Assessment of the 2018-19 Fish Deaths in the Lower Darling. The low contribution, which is consistent with other terminal wetland systems, is a result of most of the water within the system flowing naturally towards the terminal wetlands and watercourse.

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megalitres for shared contribution to the northern basin. The NSW and Australian Government's hold 54,600 megalitres LTDLE entitlements. Based on IQQM long-term modelling and the volume of water purchased for the environment

[22] Based on IQQM long-term modelling and the volume of water purchased for the environment

[23] Refer to the Murray Darling Basin Authorities Socio Economic condition reports, Social and Economic Analysis of the Moree Community, 2009. Cotton Catchment Communities CRC

630-nbr-community-profile-moree-hr.pdf (mdba.gov.au)
https://www.mdba.gov.au/sites/default/files/publications/630-nbr-community-profile-collarenebri.pdf

The natural hydrology has been altered via modification of the river and operations with an increase in end-of-system connectivity. This channelisation and re-regulation occurred throughout the last century to initially deliver regular stock and domestic water supplies to users and then to deliver irrigation water more efficiently. Flows are now regulated down the Mehi, Moomin and Carole, which can now join the Barwon River. However, even with these modifications there remains limited capacity to move water through these systems with channel constraints limiting the daily flows.

12.3 What we do

The GVIA's mission is to build a secure future for our members, the environment and the broader Gwydir Valley community through irrigated agriculture, we do this together by making every drop count in the river or the aquifer, on-farm, for the environment, or for our community[24].

GVIA members hold entitlements within the Gwydir regulated and unregulated surface water areas, in addition to groundwater resources. All of which are managed through water sharing plans, which have been progressively developed since early 2000.

The GVIA organisation is voluntary, funded by a nominal levy, cents/megalitre on regulated, unregulated and groundwater water entitlement. The levy is paid and supported on average by 85% of the eligible entitlement (excludes NSW and Commonwealth entitlement).

The Association's primary activities revolve around negotiating with government at a Federal, State and Local level to ensure equality and the rights of entitlement holders are maintained and respected. The core activities of the Association are funded entirely through the voluntary levy, the Association does however undertake programs and projects to maintain and improve the sustainability of members on-farm activities, which can be funded by government or research corporations.

The Association is managed by a committee of a minimum 11 entitlement holders and employs a full-time executive officer and a part-time administrative assistant, as well as hosting a Project Officer funded through the Cotton Research and Development Corporation, the Gwydir Valley Cotton Growers Association and the GVIA.

12.4 Contacts

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[24] For more information, see our corporate video on https://vimeo.com/177148006