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SUBMISSION

Climate change and the Murray–Darling Basin Plan Discussion Paper

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Introduction

The NSW Irrigators' Council (NSWIC) is the peak body representing irrigation farmers and the irrigation farming industry in NSW. Our Members include valley water user associations, food and fibre groups, irrigation corporations and commodity groups from the rice, cotton, dairy and horticultural industries. Through our members, NSWIC represents over 12,000 water access licence holders in NSW who access regulated, unregulated and groundwater systems.

NSWIC engages in advocacy and policy development on behalf of the irrigation farming sector. As an apolitical entity, the Council provides advice to all stakeholders and decision makers.

Irrigation farmers are stewards of tremendous local, operational and practical knowledge in water management. With over 12,000 irrigation farmers in NSW, there is a wealth of knowledge available. To best utilise this knowledge requires participatory decision making and extensive consultation to ensure this knowledge can be incorporated into best-practice, evidence-based policy. NSWIC and our Members are a valuable way for Governments and agencies to access this knowledge.

NSWIC welcomes this public exhibition as an opportunity to share local, practical and operational knowledge and expertise in water management. NSWIC offers the expertise from our network of irrigation farmers and organisations on an ongoing basis to ensure water management is practical, community-minded and follows participatory process.

This submission represents the views of the Members of NSWIC with respect to the *'Climate change and the Murray–Darling Basin Plan Discussion Paper'*. Each member reserves the right to independent policy on issues that directly relate to their areas of operation, expertise or any other issues that they deem relevant.

Background

The Murray–Darling Basin Authority (MDBA) released a discussion paper to explain the impact of climate change across the Basin, and how the Basin Plan manages climate change. The discussion paper sets out focus research questions which the MDBA will be investigating through its climate change program.

This public consultation seeks input from the scientific community and stakeholders to ensure the climate change work program is fit-for-purpose, and will meet future needs of the environment, communities and industries within the Basin.



Overview

NSWIC welcomes the discussion paper and work program, recognising the need for improved knowledge into the impact of climate related impacts across the Basin, and how these impacts are, or could best be, managed particularly regarding the impacts on water users.

NSWIC agrees that we need to better understand specifically what the impacts are possible in terms of the hydrology of rivers, the operation of rivers, and the impacts on water markets and water users. It is a core principle of NSWIC that research (such as this work program) must be on-going, and include review mechanisms, to ensure the best-available data can inform best-practice policy through adaptive processes. For that reason, NSWIC supports the need for this work program.

NSWIC has concerns that reductions to water availability in the Basin, is leading to increasing challenges. This will have significant impacts on farming in the Basin due to water reliability, input costs for production, and the nature of production itself. These impacts will extend to farming communities whom depend on reliable water supply for agriculture to support local jobs and economies.

Farmers in the Murray-Darling Basin are already experiencing reduced water availability (with many parts currently facing the worst drought on record, less than 10 years after the last worst drought on record) and adapting through various means. Farmers and commodity bodies have undertaken significant research into new crop varieties and water efficient operations. Farmers themselves are actively evaluating crop type, changes to water take, storage and on-farm management. A greater understanding (and communication of) the exact impacts on water users, and adaptation pathways for water users, would have continuing benefits across the Basin.

In summary of the points raised in this submission, NSWIC recommends:

- Acknowledgement in the discussion paper and work program that farmers are at the front line of impacts and are assigned the full risk of reduced water availability under current legislation.
- Inclusion of adaptation pathways of irrigation farmers, and opportunities for farmers to meet growing water security challenges, in the research program.
- Inclusion of local knowledge from farmers and communities as a valuable contribution to further research.
- Inclusion of research into the Basin economies and impacts on the water market is strongly supported.
- Communication of the impacts on farmers in the Basin, to the public is required.



Submission

Acknowledgement in the discussion paper that farmers are at the front line of climate change impacts and are assigned full risk of reduced water availability from climate change under current legislation

Under the Federal *Water Act 2007 (Cth)* water access entitlement holders (largely held by irrigation farmers), bear the full risks of any reduction or less reliable water allocation under their water access entitlements which are due to climate variation or droughts.

Box 1: Extract from the Water Act

WATER ACT 2007 - SCHEDULE 3A

Risk assignment framework

Part 1 -- Clauses 48 to 50 of the National Water Initiative

Water access entitlement holders are to bear the risks of any reduction or less reliable water allocation, under their water access entitlements, arising from reductions to the consumptive pool as a result of:

- (i) seasonal or long-term changes in climate; and
- (ii) periodic natural events such as bushfires and drought.

Climate variability is expected to impact on water availability, and thus the reliability of water allocations and the consumptive pool. NSWIC note in the Discussion Paper that:

“Climate change is expected to increase production risks to agriculture, through reduced water availability, higher evapotranspiration and higher temperatures.”¹

This means that the risks to water access entitlement holders will continue to increase, and must be managed accordingly. It is vital that mechanisms are in place to mitigate and adapt to these increased risks through risk distribution and transfer mechanisms.

While drought is the current focus of climate policies, it is widely accepted that climate variations will lead to increased extreme events, meaning drought and flood. Therefore, any initiatives to recognise and mitigate for climate variations must include management of flood events and consider whether these events can be managed in a way that can improve or maintain the reliability of water availability.

Inclusion of adaptation pathways of irrigation farmers, and opportunities for farmers to meet growing water security challenges, should be included in the research program.

The proposed research program includes 5 elements for early consideration. A noticeable omission from this list is understanding the impacts on water users, how water users manage the impacts at a local/farm scale, ways farmers adapt to a varying climate of water availability,

¹ Murray-Darling Basin Authority, ‘Climate change and the Murray-Darling Basin Plan’ MDBA Discussion Paper (February 2019) [10].



and the impacts on farms and farming communities. Whilst element 2 includes reviewing adaptation actions implemented by Basin governments and environmental water holders², it does not currently include the adaptations actions undertaken by other water holders, such as productive water users. Irrigation farmers have adapted to a varying climate of water availability through their management and operational practices, and this would be an important part of the research program to understand these adaptations and further opportunities at the earliest possible stage.

NSWIC notes that the discussion paper does include:

“Agricultural industries have been adapting to these risks through changes in business and operating models. Highly water-dependent industries (e.g. irrigation industries) are also adapting to the reality of less water and will continue to do so.

Some of the responses by irrigators to future climate variations include:

- *A change of crop types such as:
 - *a shift to more drought tolerant or water efficient varieties*
 - *a spatial shift in where crops are grown*
 - *a reduction in total permanent plantings and an increase in annual crops under a future of reduced water availability. Annual crops allow for greater inter-annual flexibility in water use because perennial planting require water every year. The shift to annual crops could be substantially more if the current irrigation footprint is maintained.**
- *A possible shift in the irrigation season from summer to autumn/spring – such changes have already been observed in the southern basin dairy industry.*
- *A reduction in both annual and permanent crop types under the more severe models that see substantial reductions in water availability.”³*

NSWIC suggest the MDBA needs to groundtruth these assumptions and what role the water market plays in future water use trends. For example, the presumption that there would be a reduction in permanent planning and a shift to annual crops has not occurred. The higher value returns being experienced by certain commodities has led to increased development of permanent plantings in some areas and the shift of allocation via the temporary water market away from annual crops.

In addition, NSWIC recommends that this list may also include:

- Changes towards water efficient practices – this includes innovative technology and operational practices, such as irrigators with more efficient dispersal and soil moisture detectors to use water more conservatively and efficiently.
- Changes to on-farm water storages – with designs to minimise evaporation and losses.
- Changes to water harvesting and management – for example, the ability to use carryover water means farmers are readily using forecasts to determine timing of water take, storage and application. Carryover water is an adaptation mechanism in itself, as farmers have the opportunity to manage risk to reduced water availability by carrying forward their water allocation.

² Murray-Darling Basin Authority, ‘Climate change and the Murray-Darling Basin Plan’ MDBA Discussion Paper (February 2019) [25].

³ Murray-Darling Basin Authority, ‘Climate change and the Murray-Darling Basin Plan’ MDBA Discussion Paper (February 2019) [10].



- Spatial shifts in dominant irrigation regions to follow water availability.
- Trends towards higher-value crops – with reduced water availability and thus higher input prices for water,

Further research into current adaptations, and potential future adaptation measures, would be a beneficial addition to the research program.

NSWIC expresses interest in working collaboratively to develop the research program further.

NSWIC note to the MDBA that a large hindrance on the further development of water efficient practices is that there remains a large funding gap for irrigation-specific Research, Development & Extension. Funding for water efficiency tends to be crop-specific, rather than focused on water use and technology. NSWIC has advocated to both the State and Federal Government for the need to provide funding for irrigation-specific RD&E.

Inclusion of local knowledge from farmers and communities as a valuable contribution to further research.

NSWIC suggests that irrigation farmers, and farmer representative organisations, are involved in the research program. Within the 5 key elements, NSWIC notes that various partners are involved (research organisations, governments, policy intuitions, eminent scientists, etc). The lived experiences of farmers, and their observations of the events, impacts and adaptations from climate variations, would be a valuable addition to understanding what is changing in the Murray-Darling Basin.

Inclusion of research into the Basin economies and impacts on the water market is strongly supported

NSWIC strongly supports the inclusion of research into the economic impacts of climate on communities, and the water market. The water market is an important adaptation mechanism for farmers, as it allows farmers to sell their water entitlements in a period of low water availability. This means that the water market allows farmers to manage risks associated with reduced water availability, as it acts as an adaptation or insurance mechanism. The MDBA should also ascertain whether the water market has changed the use pattern for water and if that is impacting on resource management.

Communication of the impacts of climate change on the Basin is needed

NSWIC note from the Discussion Papers that many parts of Northern NSW in the upper Murray-Darling Basin had the lowest rainfall on record in 2018, and the volume of inflows into the Basin have decreased over the last 20 years⁴.

Recent media has continued to attribute low water availability to irrigation farmers. This media fails to recognise the significantly low water availability, and the consequent 0% general security water allocations across much of the State.

⁴ Murray-Darling Basin Authority, 'Climate change and the Murray-Darling Basin Plan' MDBA Discussion Paper (February 2019) [3].



There is evidently a greater need to communicate the impacts of climate on the Basin, and the way these impacts are managed, to ensure the public is appropriately informed, and to prevent unwarranted vilification of irrigation farmers. NSWIC remains concerned for the mental health of irrigation farmers, who whilst already battling devastating drought, are now facing bullying and attacks from misinformed public.

The general public, understandably, are increasingly concerned about the health of the Basin. This was demonstrated by recent fish deaths and understandable public outcry. NSWIC notes that:

“Longer periods of low flow with higher temperatures will also increase the likelihood of blue-green algal blooms, with potentially devastating impacts on native fish and town water supplies.”⁵

It is critical that the public understands the role of climate towards these impacts, to ensure misinformed public allegations are not made towards either river managers or irrigation farmers.

Conclusion

NSWIC supports the need for the work program, recognising the need to better understand the impacts of climate variations across the Basin, particularly the impacts of reduced water availability and extreme events for water users and the agricultural industry.

NSWIC hopes this work program can lead to positive outcomes for irrigation farmers to adapt to the impacts of a changing climate of water availability, and lead to improved management practices. Furthermore, NSWIC hopes this work program can lead to a better understanding from others into the changing nature of water resources in the Basin.

NSWIC strongly encourages the MDBA to utilise the vast knowledge held by irrigation farmers of their lived experiences of the impacts from climate variations, and adaptation pathways, to contribute towards these outcomes. NSWIC offers our assistance to coordinate this knowledge, and express interest in being involved in this program.

Kind regards,

NSW Irrigators' Council.

⁵ Murray-Darling Basin Authority, 'Climate change and the Murray-Darling Basin Plan' MDBA Discussion Paper (February 2019) [10].