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Senate Select Committee on the Multi-Jurisdictional Management and Execution of the Murray-Darling Basin Plan
PO Box 6100 Parliament House
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Supplementary Submission

Senate Inquiry into the Multi-Jurisdictional Management and Execution of the Murray-Darling Basin Plan

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 has participated in all aspects of consultation regarding the establishment and implementation of the Murray-Darling Basin Plan (“the Plan”) since the passing of the Commonwealth Water Act 2007 (“the Water Act”).

IRN provided a submission to the Inquiry dated 6th March 2020, and we are very pleased to have the opportunity to provide The Senate Select Committee a supplementary submission. This supplementary submission will draw attention to four important areas of water management:

1. The environmental damage being caused by large inter-valley trading (IVT) between the Goulburn and Murray Rivers
2. The environmental damage being done in the Murray by large irrigation orders and the conflation with environmental deliveries.
3. The usefulness of end-of-system flow targets in Northern catchments.
4. MDBA and NSW Government collusion on water recovery in the Macquarie Valley

1. Goulburn to Murray Trade Rules

Independent Member for Shepparton District Suzanna Sheed MP states on her website¹:

“For years the Goulburn Broken Catchment Management Authority has been tasked to deal with the improvement of the environment for Goulburn River banks and verges, and substantial sums of money have been invested in this work. We are now being faced with the loss of that valuable work as a result of continual high level flows down the Goulburn River to meet inter-valley transfers and environmental requirements.

...

“It is now quite clear that the architects of the Murray-Darling Basin plan were well aware of the damage to irrigation communities that would flow from the plan but were not prepared to be up-front about it. River and irrigation communities up and down the basin advocated long and hard to ameliorate the impacts of the plan on their communities.”

Here, Ms Sheed is conflating the impacts of environmental flows associated with the Murray Darling Basin Plan with flows to meet inter-valley transfers from the Goulburn to the Murray. This conflation permeates local commentary in the Shepparton region.

The facts paint a different picture altogether.

The Commonwealth holds 312,557 ML of high reliability shares and 42,467 ML low reliability shares in the Goulburn system. The total volume of the consumptive pool is only available by paying a fee – a barrier to community members accessing relevant data.

Below is a table containing the volumes delivered in gigalitres each month from the Goulburn inter-valley trade account to the Murray system over the last 8 water years. Please note, these volumes include deliveries through Lower Broken Creek and the Campaspe River.

Season	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
2012/13	0	0	0	0	0	53.5	46.2	0	0	0	0	0	99.7
2013/14	0	0	0	12.5	14.2	2.9	35.1	61.1	17.0	0	0	0	142.8
2014/15	0	0	0	21	67.4	21.7	42.9	36.4	47.4	3.7	0	0	240.6
2015/16	0	0	0	0	10.8	10.7	13.7	15.4	21.1	0	0	0	71.7
2016/17	0	0	0	0	0	0	38.2	29.8	20.5	21.2	0	0	109.7
2017/18	0	0	0	0	0	0	37	75.5	85.1	73.7	37.5	10.4	319.5
2018/19	0	28.2	27.2	57.6	27.5	42.1	82.9	68.9	50.8	28.2	19.8	0	433.4
2019/20	0	0	0	9.7	29.3	49.0	61.0	42.3	14.4	0	0	0	205.7
2020/21	0	0	0	0	27.0	37.2	37.8	36.4	39.1	47.3	40.0	0	264.8

The table above shows the sharp increase in IVT movements in recent years (figures in GL, 1 GL = 1 billion litres).²

Flows in the Goulburn River are naturally at their lowest in summer. This provides the slow, shallow habitat required for the survival of juvenile fish, deep-water habitat for larger fish and submerged snags for water bugs. These conditions encourage planktonic production for food, and maintain water quality. It is optimal that flows do not exceed 1,000ML a day in summer.

¹ https://suzannasheed.com.au/goulburn_river_environmental_flows/

² <https://www.g-mwater.com.au/water-resources/managing-water-storages>

In order to meet the IVT deliveries as per the table above, high flows in summer for extended periods of time have been allowed.

An Environmental Flows Study³ explains the damage likely caused by high flows in summer includes potential damage to young plants recruiting after spring flows, disturbance of fish nesting or the need to allow for bank drying at popular access times. Flows in this period that are higher than those delivered in late winter may also impact platypus by flooding nesting burrows. In January, high flows might adversely impact turtle nesting habitat by inundating and killing eggs.

Base flows exceeding 1,000 ML per day at a constant rate longer than 7 days have likely lead to bank notching and slumping. Research by the Arthur Rylah Institute suggests that increasing summer flows to 1,800 ML per day is likely to decrease Murray cod survival by more than a third.⁴

Despite the known environmental impacts of high flows in summer, one of the rule changes the Victorian Government is proposing to the inter-valley trade rules would allow flows of up to 6,000ML a day in summer and autumn.

While high flows in summer are damaging to the river, so is the lack of high flows in winter. The presence of constraints means environmental water cannot currently be delivered to the Goulburn floodplain. Releases from Lake Eildon are currently limited to 9,500 ML per day and releases from Goulburn Weir are limited to 10,000 ML per day to avoid inundation of private land downstream.

When floodplains are inundated in the right season, flows return valuable carbon to the system, which improves productivity at each level of the food chain. Connectivity to off-channel habitats provides food resources for fish, provides cues for movement throughout the system, maintains plant condition, provides nesting habitat for turtles, feeding habitat for platypus and maintains plant condition and habitat complexity.

The Yorta Yorta Nation Caring for Country and Culture: Whole of Country Plan 2012-2017 states:

'Flooding and water flows have changed in timing and now peak during the summer irrigation season. This has had major consequences for the health of reptiles including turtles, and has required both Yorta Yorta and other natural resource managers to adapt [their] management practices and priorities, including in relation to uses and quality of water resources'

The environmental and cultural values of the Goulburn River are suffering significantly due to unnaturally high IVT flows that are unseasonable. The Victorian Government appears to be prepared to introduce revised trade rules that would make the situation even worse, and create more restrictions to the use of environmental water.

Commentary that conflates environmental damage caused by IVT with the use of environmental water is based on profoundly incorrect assumptions.

³ Horne, Avril et al. (2020). Kaiela (Lower Goulburn River) Environmental Flows Study.

⁴ Tonkin, Zeb et al. (2021). Linking flow attributes to recruitment to inform water management for an Australian freshwater fish with an equilibrium life-history strategy. 10

2. High flows in the Murray

Regulation of the Murray River has caused damaging erosion and under mining of the banks, a problem that has been getting significantly worse in recent years. This increase in damage to the structure of the river has coincided with the increase in high security irrigation demand in the Sunraysia district.

The high flows in the Murray are being pointed to by sections of the community as being the cause of much environmental damage, especially in the Barmah Choke. However most of the loudest commentary is pointing the finger at managed environmental water and the Murray Darling Basin Plan as the main culprit.

IRN believes that the most significant environmental damage is being done in summer, when large irrigation orders are moved through the Murray to meet the growing demand for water by nut plantations. We do not consider that the Commonwealth Environmental Water Holder has enough water in their accounts to be causing the damage that is rightfully distressing the community.

The Commonwealth Environmental Water Holders Office actively manages environmental water in the Murray to reduce the environmental damage caused by high flows for irrigation licences.

“Commonwealth Environmental Water Office assistant secretary Hilary Johnson addressed bank erosion in the Q&A, using the Goulburn River as an example of how the science has improved. “Erosion is a growing issue and it is a natural process we’ve seen increase quite dramatically,” Mr Johnson said.

“One of the key things we’ve found is that long, stable flows result in bank notching, particularly over summer, and when a higher flow comes in later that bank material above the notch slumps.” Mr Johnson said environmental water was now used as a buffer, running in after high flow events so the water level dropped slowly and bank material didn’t slump over notches as dramatically.

“We also try to improve that variability (in water level) ... we try and do things to promote the growth of vegetation along the river banks which we’ve had success in places like the Goulburn River,” he said.

“Also our ability to get water out of the main river channel and into floodplains, creeks and flood runners that go around the main channels help us to dissipate that flow power compared to, say, concentrating it through a pipe. “It reduces the energy and hopefully reduces erosion.”⁵

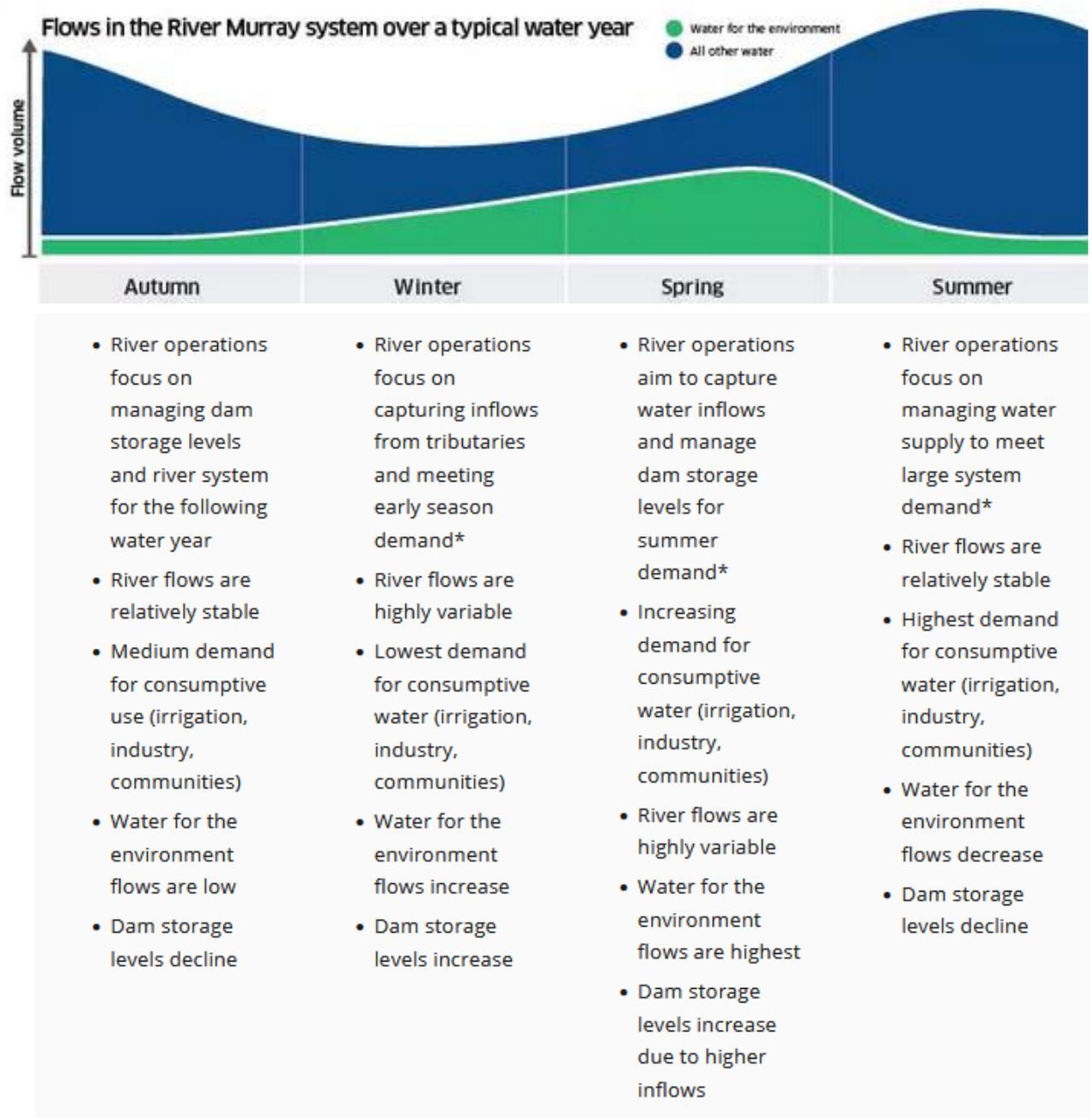
For the purposes of this submission, IRN undertook to obtain volumes of irrigation orders and environmental orders that have passed down the Murray in the last five years. It is with frustration that we can report that the information has not been able to be sourced to date.

We have been informed by river operations staff that unless the MDBA have compiled a study on the volumes, there will be no available data. IRN will continue to seek this information after the submission period for this Inquiry has closed.

There are weekly reports available on the MDBA website, but no clear delineation between irrigation orders and environmental volumes is easily available to the public. There is a high

⁵ The Country News 26th September 2021 *Environmental water helps stop erosion, says CEWO*

level graphical representation of the ratio between irrigation and environmental flow volumes available, please see below. This graph does make it clear that it is irrigation orders that are the reason for the unseasonal, damaging high flows – however this does not quell the vitriol of those that are determined to blame the Plan for every problem they see.



* including meeting South Australia's flow entitlement.

Graph: Murray Darling Basin Authority – Flows in the River Murray System⁶

⁶ <https://www.mdba.gov.au/water-management/regular-reports-murray-data-storages/flows-river-murray-system>

3. End-of-system flow targets in the Northern Basin

Ensuring that water flows from the main tributaries into the Barwon-Darling/Baaka River is an essential policy requirement to ensure the health of the main connector between the Northern and Southern basins.

The Barwon-Darling/Baaka flows through the arid, low rainfall western NSW with low topographic relief and relies on 95% of flows from tributaries:

Culgoa River:	15.1%
Border Rivers:	20.9%
Gwydir River:	12%
Namoi River:	23.1%
Macquarie/Bogan Rivers:	21.6% ⁷

Rare contributions come from the Warrego River and very occasionally from the Paroo River in times of high rainfall and major flood events.

The severely reduced flows to the Barwon-Darling/Baaka prior to and during the 2018 – 2020 drought was a key contributor to the significant fish kill event in the lower Darling/Baaka.⁸

This river has had previous major ecological disasters, notably during the 1991/1992 summer when 1000 km of the river turned bright green due to the world's largest reported outbreak of blue-green algae. This was the result of run-off of agricultural phosphate and nitrate fertilisers, and town sewage effluent combined with very low water flow.⁹

This catastrophe resulted in the understanding that irrigated agriculture was not the only use for water. The various states and territories involved in the Murray-Darling Basin set a limit on water extraction at the amount that was being extracted in 1993/1994. Despite this, on-farm dam storage volume in northern NSW has increased from 574 Gegalitres in 1993/94 to 1395 Gegalitres in 2020.¹⁰

The Need for End of System Flow Targets

Without a flow from the major tributaries, the Barwon-Darling/Baaka River does not exist, it is one very long sand-pit and there is no other connection between the Northern Rivers and the Murray River system.

There are towns all along the River that rely on its waters to survive. There are people that rely on the river for cultural and recreational purposes, for jobs and for their well-being. First Nations communities have strong connection to the river. And there is the environment – fish, many other aquatic species, water-birds, freshwater mussels and everything from insects to

⁷ Webb, McKeown & Associates Pty Ltd, 2007. *State of the Darling Report*

⁸ Vertessy, R. et al, 2019. *Independent assessment of the 2018-19 fish deaths in the lower Darling.*

⁹ <https://www.guinnessworldrecords.com/world-records/87147-largest-freshwater-blue-green-algal-bloom>

¹⁰ Slattery and Johnson, 2021. *Floodplain water harvesting in the northern New South Wales Murray-Darling Basin.*

kangaroos and giant goannas that all depend on the river water. It is essential that the Barwon-Darling/Baaka River receives water and is permitted to flow whenever possible.

The Water Sharing Plan for each tributary needs to have an end of system flow target, an average annual flow based on the relative contribution of each tributary prior to extensive irrigation extractions. In addition the extraction of water from the Barwon-Darling/Baaka itself must be closely monitored.

The unregulated harvesting of floodplain water in the northern rivers is the greatest threat to flow in the Barwon-Darling/Baaka River. Any licencing of floodplain water harvesting should occur only after end of system targets are in place in the Water Sharing Plans.

End of system flow targets are also needed at Menindee Lakes to ensure that connectivity with the Lower Darling and Murray water sources are improved. For end of system flow targets to be effective, there would have to be an improvement in the number of gauges in the system.

Northern Basin Review

The loss of 70 GL of water to be returned to rivers in the Northern Basin is a further threat to the health of the Barwon-Darling/Baaka River. Some key environmental indicators were already compromised in the river system prior to this reduction.

It is now critical that management of flows in northern tributaries are improved through:

- the urgent roll out of metering to ensure compliance
- rules in Water Sharing Plans to protect end-of-system flow targets
- strong regulation of floodplain harvesting under the Cap, including no 500% carryover in NSW
- better regulation of water extraction within the Barwon-Darling/Baaka River itself

4. The myth of ‘over-recovery’ in the Macquarie Valley

The Macquarie Valley supports the Ramsar listed Macquarie Marshes and contributes a significant flow into the Barwon-Darling/Baaka River.

Both these ecosystems have experienced severe ecological decline since increased river regulation and poor management policy. The purpose of the Murray-Darling Basin Plan was to return water to river systems to repair some of the damage inflicted through many years of over-extraction.

It is greatly concerning that both the Macquarie Marshes and the Barwon-Darling/Baaka River have continued to decline since the implementation of the Basin Plan.

The argument, made through modelling manipulation, that the Macquarie Valley has been ‘over-recovered’ in regard to environmental water held by the Commonwealth Environmental Water Holder, does not bear out with the state of river and wetland health both within and downstream of the valley.

IRN commissioned a report (attached to this supplementary submission) to clarify how this 'over-recovery' position was developed. We are very concerned that as late as 2019, the NSW Government and Murray-Darling Basin Authority were colluding to make changes to the Sustainable Diversion Limits in the Macquarie Valley.

This issue is a very good example of manipulation of outcomes in the Basin Plan that impacts on environmental resilience.

The use of modelling manipulation to camouflage poor decisions and to respond to vested-interest lobbying is a key failure of the planning process.

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