

Replies to Questions on Notice from Martin Mallen-Cooper:

The Hon. MARK BANASIAK: Thanks. Dr Mallen-Cooper, I tabled a document on Monday and I think the committee secretariat has emailed it to you. It was advice from the State Government talking about allocation of water for downstream near the Barmah-Millewa area and that there was 358,000 megalitres borrowed against the environmental water allowance which was then having to be garnished from general security allowance from the users down there. Can you contextualise that for us in terms of the impact of essentially extracting that amount of water against an environmental licence compared to the impact of floodplain harvesting?

Reply

The volume of 358,000 megalitres (358 Gigalitres) provides a useful comparison to contextualise floodplain harvesting.

Floodplain harvesting and harvesting of supplementary flow (high in-channel flows) both use on-farm storage (“turkey nests” or “ring tanks”). The extent of these storages provides a good estimate of the extent of these types of diversions. In the NSW portion of the Northern Murray-Darling Basin, the NSW Government (DPIE) estimates there is 1450 gigalitres (GL) of on-farm storage in the Northern Basin of NSW, which aligns with the independent assessment of Slattery and Johnson (2021)¹ of 1395 GL.

On-farm storage built prior to The Cap in 1995 would include legitimate floodplain harvesting and supplementary flows, while on-farm storage built after 1995 would not be compliant with The Cap – with the exception of licences already purchased but not developed, or licences transferred. From 1995 there has been an additional 821 GL of on-farm storage built in the NSW portion.

The 821 GL is 2.3 times the 358 GL borrowed against the environmental water allowance for Barmah-Millewa. As mentioned, some of the 861 GL of storage might be from legitimate existing licenses as mentioned, and not all on-farm storage for floodplain harvesting would be used within the same year. Nevertheless, floodplain harvesting developed after The Cap of 1995, is very likely to be over double the 358 GL mentioned.

The Hon. BEN FRANKLIN: Thank you. Let's stick with monitoring but I will move onto fish numbers and stick with you, Dr Mallen-Cooper. What monitoring and metering of fish numbers has been done in the Darling and the Menindee Lakes since the fish kills in 2019?

Reply

The major fish kills of 2019 occurred in the lower Darling River immediately downstream of Menindee lakes. The Commonwealth Environmental Water Office funded sampling of fish in the lower Darling River by the NSW Department of Planning Industry and Environment in 2020-21². The sampling was comprehensive and assessed adult, juvenile, and larval fish. Although the fish deaths were extensive and impacted populations, the study showed that native fish were still present and concluded that “the LDR native fish community are continuing to recover from the fish deaths and

¹ Slattery & Johnson 2021. Floodplain water harvesting in the Northern New South Wales Murray-Darling Basin. 36 p.

² Stuart, I., D'Santos, P., Rourke, M., Ellis, I., Harrison, K., Michie, L., Sharpe, C. and Thiem, J. 2021. Monitoring native fish response to environmental water delivery in the lower Darling River 2020-2021. State of New South Wales and Department of Planning, Industry and Environment, New South Wales, Australia.

that permanently implementing flow delivery tailored to native fish requirements will help maintain this nationally significant fish community.”

The Hon. BEN FRANKLIN: Thank you. Do you know if we have seen any improvement in the fish numbers in the Menindee Lakes with the recent floods?

Reply

Yes, the recent flows into Menindee Lakes have created a large spawning event of the iconic Golden Perch. The data shows that these fish spawned hundreds of kilometres upstream in the Barwon River in flow events and the larvae drifted downstream to the lakes³. This demonstrates that large flow events over a large scale have direct benefits to fish populations, so protecting those flows enables the river ecosystem to function.

The Hon. BEN FRANKLIN: Okay. Can I move on to environmental water and ask what your thoughts are about environmental water being released down the Darling Anabranh?

Reply

The environmental water release down the Darling Anabranh has major environmental benefits for this system for fish, birds and other water-dependent flora and fauna.

There are sometimes discussions about the “loss” of water to seepage and evaporation water in the Anabranh and Menindee Lakes. However, this applies to all surface water. Interestingly, on-farms storages lose 20-40% to evaporation. In the NSW portion of the Northern Murray-Darling Basin on-farm storages have a total surface area of approximately 42,700 ha¹, which is similar to all the Menindee Lakes combined at 47,500 ha. The loss of water from on-farm storages represents a major opportunity: to cover those storages and minimise evaporation.

The Hon. BEN FRANKLIN: Yes, please. That would be wonderful. I am looking forward to the bevy of information that we are going to be receiving. Sticking with that sort of issue, obviously there has been a lot of discussion around Menindee. Do you think we should be dropping water out of the Menindee to keep Lake Victoria full?

Reply

Passing water out of Menindee Lakes to Lake Victoria also has major environmental benefits. The data shows that golden perch in Menindee Lakes can pass downstream to the Lower Darling River (LDR) when water is released^{2,3}. These flows also provide excellent flows for Murray cod to spawn in the LDR and for those young fish to survive^{2,3}.

³ Thiem J., Michie L, Butler G, Ebner B, Sharpe C, Stuart I, Townsend A. (2021) Golden perch spawning and larval drift under protected tributary and mainstem flows in the northern Murray-Darling Basin. Report prepared for the Freshwater Environment Branch of NSW DPI Fisheries.