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## What happens to northern flood water as it flows downstream



*The introduction of the floodplain harvesting regulatory framework will allow more floodwater to return to our rivers, wetlands and natural water bodies. This water will have a range of significant local environmental benefits. These benefits will quickly reduce as water travels downstream.*

### Effects of floodplain harvesting in the Murray-Darling Basin

The Murray-Darling Basin covers 14% of Australia, connecting southeast Queensland, NSW and South Australia through a network of rivers, lakes and wetlands. These waterways channel flows downstream through the two major Basin rivers, the River Murray in the south and the Darling River in the north. Both of these major rivers connect at Wentworth before flowing on to South Australia.

On average, the Basin receives approximately 27,200 GL of inflows each year which come from rainfall, aquifers and other flows into the Basin. This includes approximately 14,500 GL into the southern Basin and 12,700 into the northern Basin. Of the 12,400 GL which reaches Wentworth each year, 86% (10,700 GL) comes from the River Murray in the south and 14% (1,700 GL) comes from the Darling River in the north (Figure 1).

The reason that the northern Basin contributes such a small proportion of total flows to the south is because there are:

- more variable climate and rainfall patterns in the north
- natural processes including evaporation, seepage and water captured by soils and vegetation.

### How will the extra water saved through the regulation benefit downstream users and the environment?



#### Within valley

Significant benefits to many interests and the environment



#### Within northern Basin

Modest benefits to many interests and the environment during wet and very wet periods



#### Within southern Basin

No disbenefits to water allocations or flows from floodplain harvesting in the north

## Effects of floodplain harvesting regulation on flows to the southern Basin

Floods that lead to floodplain harvesting in the northern Basin generally occur in only one out of every five years. These wet years are an opportunity for landholders to collect and store water for dry periods to come. They are also an important time for flood waters to refill streams, wetlands, aquifers and increase connectivity downstream.

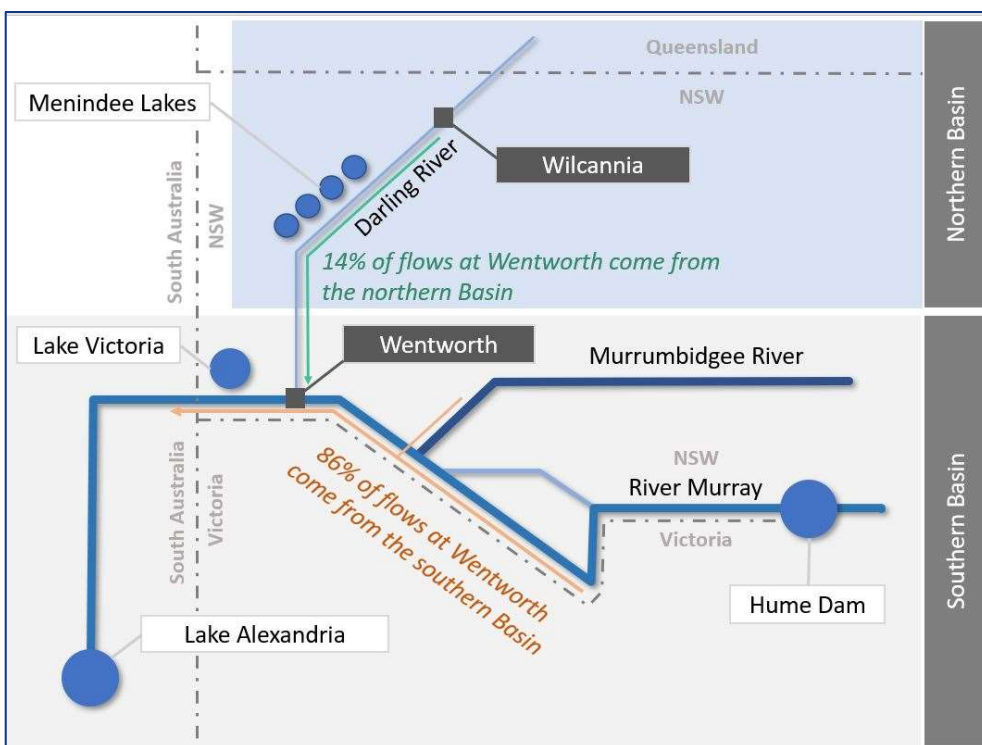
The variability of flows in the north are high, meaning that during floods, contributions to the southern Basin can increase by as much as eight times the average volume. In contrast, in severe drought conditions like those experienced in 2018/19, the northern Basin is unable to meaningfully contribute to the southern Basin inflows as there is almost no water held in public storages and no significant extractions.

The floodplain harvesting reform will ensure that water harvested from floodplains in the northern Basin will be returned to levels that do not cause the legal extraction limits to be exceeded. Floodplain harvesting represents

around 25% of legal limits in the northern Basin, but current diversions have caused an exceedance of the limits in some valleys. For example, floodplain harvesting in the Gwydir valley must be reduced by about 30% so that legal limits are met.

Floodplain harvesting in northern Basin valleys is estimated to be on average around 300 GL/year during flood events. After the regulatory framework commences, around 70GL/year on average less water will be harvested from the floodplain, benefiting the local environment and other users.

Modelling indicates that much of these additional floodplain flows will be consumed by natural processes on the floodplains and in the tributary rivers. Only a minimal amount of this floodwater will make it to Wilcannia on the Lower Darling River. After much of that water evaporates as it passes through the large, shallow Menindee Lakes, even less will make it to Wentworth.



**In a hypothetical scenario in which floodplain harvesting in the northern Basin were to cease completely and no other extractions were to take its place, preliminary modelling indicates that there would be less than 1% improvement in inflows to the River Murray on average.**

Figure 1: Confluence of the northern and southern Murray-Darling Basin

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