

# Water quality snapshot: Hardy Inlet 2021–22

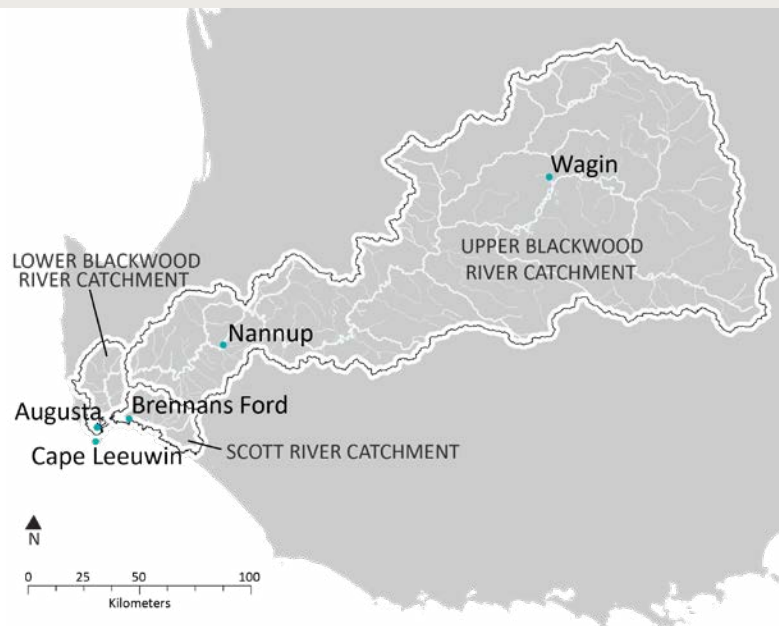
Understanding estuary condition and monitoring for change helps to guide how we manage our estuaries

Through Healthy Estuaries WA, the Department of Water and Environmental Regulation monitors water quality fortnightly in the Hardy Inlet and its catchment. This snapshot presents some insights from our water quality monitoring following the very wet winter in 2021, comparing the very wet rainfall year in 2021 with a drier year in 2019.

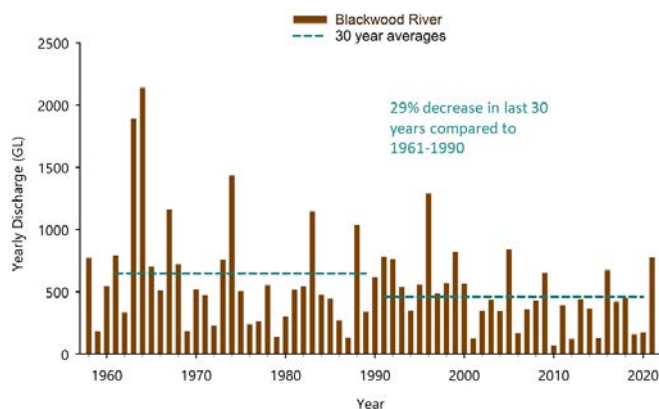
Rainfall and river flows in winter 2021 were higher than recent averages. For example, the flows in the Blackwood River in July and August were the highest recorded for 47 years. Although it was a wetter winter than other recent years, it was not as high as high-flow years before the 2000s because rainfall is declining over time.

Overall, the water quality in the estuary was good throughout 2021–22, although there were occasionally high nutrient concentrations in certain areas, especially Scott River and Molloy Island.

Two main catchments flow into the Hardy Inlet – the Blackwood and the Scott catchments. Although the Scott catchment is smaller in size than the Blackwood catchment, it accounts for a higher proportion of the phosphorus input to the estuary. This is because of the catchment's intensive agriculture land uses and poor phosphorus retention of its soils.



## Blackwood yearly flow

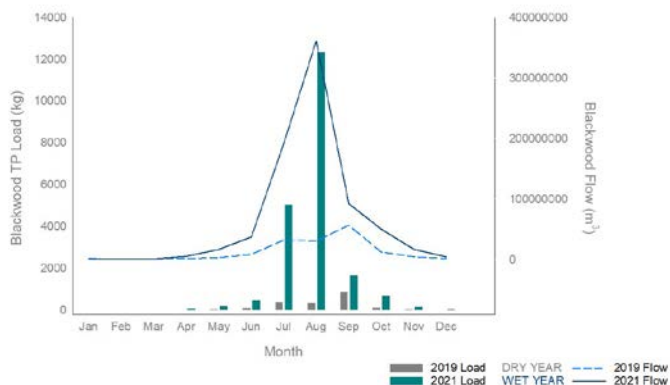


## Nutrients

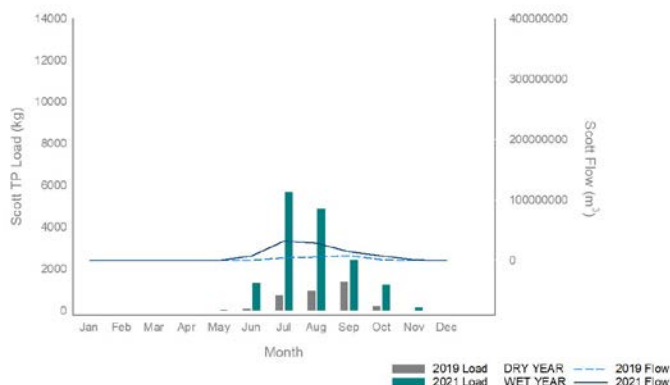
We monitor nutrient concentrations because excess phosphorus and nitrogen can promote algal growth. While algae are a natural part of aquatic ecosystems, excessive algal growth can make waterways unsightly and smelly, and has the potential to harm fish and pose risks to human health.

The rainfall during winter 2021 resulted in higher inputs of nutrients than usual into the estuary, from both the Blackwood and Scott catchments. In contrast, a lower flow year in 2019 brought smaller nutrient loads to the estuary.

### Blackwood monthly total phosphorus load and flow



### Scott monthly total phosphorus load and flow



Total phosphorus loads from the Blackwood catchment (left) and Scott catchment (right) in the high-rainfall year 2021 compared with the drier year in 2019.

## Algal productivity

Fortunately, there were no major phytoplankton blooms, *Lyngbya* blooms or fish kills recorded in 2021 and over the summer 2021–22. Macroalgae blooms were also less dense than in previous years. This was likely a result of the strong river flows continuing into spring.

Strong, continuing flows can prevent blooms forming because the nutrients may be flushed out towards the sea more quickly. Strong flows also bring with them organic matter that makes the water darker and reduces light availability, and algae need light to grow.

Algae thrive in warmer water, so the cool temperatures and overcast conditions in spring 2021 also likely slowed algal growth.



## Summary

Although high rainfall in winter 2021 washed more nutrients from the catchment into the estuary, strong flows and cool temperatures meant we saw lower than usual algal growth in the Hardy Inlet in spring and summer.

In future there are still risks of algal blooms in some areas of the inlet, especially if warm spring and summer weather follows a dry winter, or if there are short-lived inflows from seasonal summer storms. In

these situations, higher water temperatures, clear waters and low-flow conditions would favour rapid algal growth.

Estuaries like the Hardy Inlet are vulnerable in the context of climate change, where reduced rainfall limits the flushing that helped protect the estuary from blooms during 2021. Continuing efforts to reduce nutrient inputs from the catchment remain critical to improve the health of the Hardy Inlet.



More information

[estuaries.dwer.wa.gov.au/estuary/hardy-inlet](http://estuaries.dwer.wa.gov.au/estuary/hardy-inlet)

