

# Water flow and flood protection

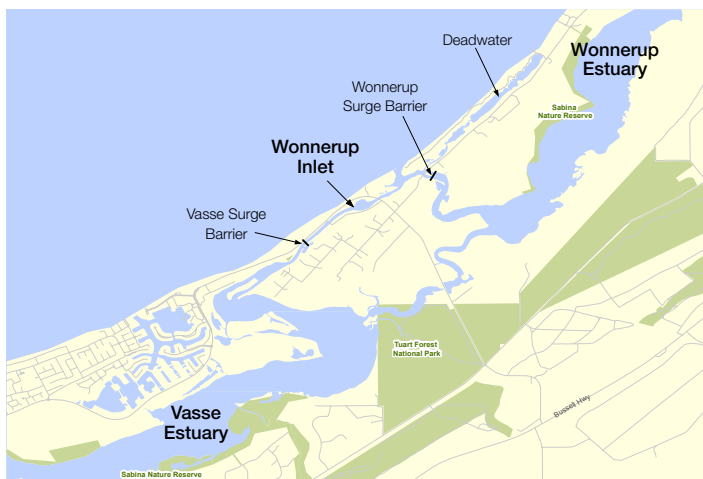
## Vasse-Wonnerup wetlands

**Changing the flow of water has changed the ecosystem from estuarine into a fresh-brackish wetland system. Large areas of the wetlands now dry out every summer and autumn**

Images courtesy Department of Water

The Vasse-Wonnerup wetlands are situated within an extensive, low-lying coastal depression. At the time of settlement, the Vasse-Wonnerup resembled a typical estuary of south western Australia with intermittently open sandbars and broad, shallow basins at the mouth of meandering rivers. Wonnerup Inlet opened into Geographe Bay through two channels, one of which closed in the early 1800s. The Vasse Estuary received direct water flows from the Abba, Sabina and Vasse rivers and indirectly from Iron Stone Gully, Buayanyup River and Carbunup River, via the Broadwater and New River. The Wonnerup Estuary received water from the Ludlow River and Capel River at its northern tip.

Water flow into and out of the wetlands has been dramatically altered since European settlement. Land surrounding the wetlands was cleared for agricultural development by free settlers. Extensive engineering works began as early as the 1880s to alter water flow throughout the catchment. These allowed for the expansion of farming into coastal areas and the protection of the growing Busselton township from flooding.



## The Wonnerup Inlet sand bar has been artificially opened since the late 1800s



### Surge barriers (Floodgates) and bar openings

Surge barriers were first installed at the exit channels of the Vasse and Wonnerup estuaries in 1908 to stop flooding of adjacent, low-lying agricultural land with salty sea water. They play an important role in flood protection of Busselton by preventing large storm surges from flooding the town and surrounding agricultural land. The current barriers were replaced in 2004 and are automatic one-way flow structures (water flows out when water levels are lower in the Wonnerup Inlet). In winter the Wonnerup Inlet sand bar is artificially opened to drop water levels in the Inlet allowing the floodgates to open. In summer the bar is opened to improve water quality in the Wonnerup Inlet. Over summer months smaller fish gates on the surge barriers are opened to improve water quality in the upper estuaries and allow fish to move through the barriers.



### River diversions

The Capel River was diverted away from the wetlands through Higgin's Cut in the 1860s, with other rivers to the west later being cut to the ocean in the early 1900s. In the 1920s extensive drainage works followed, coinciding with a State Government initiative to expand the dairy industry around Busselton. This led to increases in river flow into the wetland system and subsequent flooding of Busselton and surrounding farmland. In 1927, the Vasse Diversion Drain was constructed in order to divert water from the upper Sabina and Vasse rivers into Geographe Bay, significantly decreasing flow into the wetlands. It is estimated that the wetlands now receive only around 20 per cent of the original pre-modified flow.

### What the future holds

Changes to water flows into and out of the Vasse-Wonnerup system have greatly altered the hydrology and ecology of the wetlands. Despite modifications, the system provides critical habitat to thousands of water birds annually. Current and future investigations will look at how water flow can be increased through the system and options for bar and surge barrier management to improve water quality. Any changes to the current hydrology will need to consider the potential impacts on flood protection, surrounding land use and ecology of the system.

### More information

More information about the Vasse-Wonnerup wetlands is available under Resources on the GeoCatch website.

[www.geocatch.asn.au](http://www.geocatch.asn.au)

### Be involved

Community members will have the opportunity to be involved in the development of a management plan for the Vasse-Wonnerup wetlands. Opportunities will be promoted on the GeoCatch website or contact GeoCatch.



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