GOVERNMENT OF WESTERN AUSTRALIA

Department of **Water and Environmental Regulation**

Department of **Primary Industries and Regional Development**

Project Factsheet

3

May 2018

Reconnecting Toby Inlet

Revitalising Geographe Waterways

Toby Inlet

The Toby Inlet is a small estuary to the east of Dunsborough, with a catchment that has been highly modified to support agricultural and urban development. The Inlet itself provides important habitat for fish and waterbirds and is highly valued by the local community.

Artificial drainage, including the Station Gully Drain, was installed in the catchment to reduce flooding and support development. These drainage modifications have substantially reduced freshwater flows into Toby Inlet, which is often cut off from the ocean by the formation of a sandbar. The resulting warm, shallow, nutrient rich waters of the Inlet can suffer from poor water quality over summer months, including algal blooms and unpleasant smells that cause concern to neighbours, the broader community and visitors to the area.

To address this community concern, the Reconnecting Toby Inlet study was carried out by the Department of Water and Environment Regulation to look at options to increase tidal flushing and flows off the catchment. The study explored options to increase water flows into the Toby Inlet to address changes made to hydrology of the Inlet over the last decade that contribute to poor water quality. The study forms part of the broader Revitalising Geographe Waterways program that aims to improve water quality, waterway health and management of Geographe Waterways.

The Toby Inlet is a long narrow estuary that runs parallel to the ocean for 5 km, just east of Dunsborough.

Increasing tidal flushing of the Inlet

A range of options to increase tidal flushing of the Toby Inlet were looked at in this study including opening sandbars on the Station Gully drain and the Toby Inlet and increasing the size of the culvert between the two waterways.

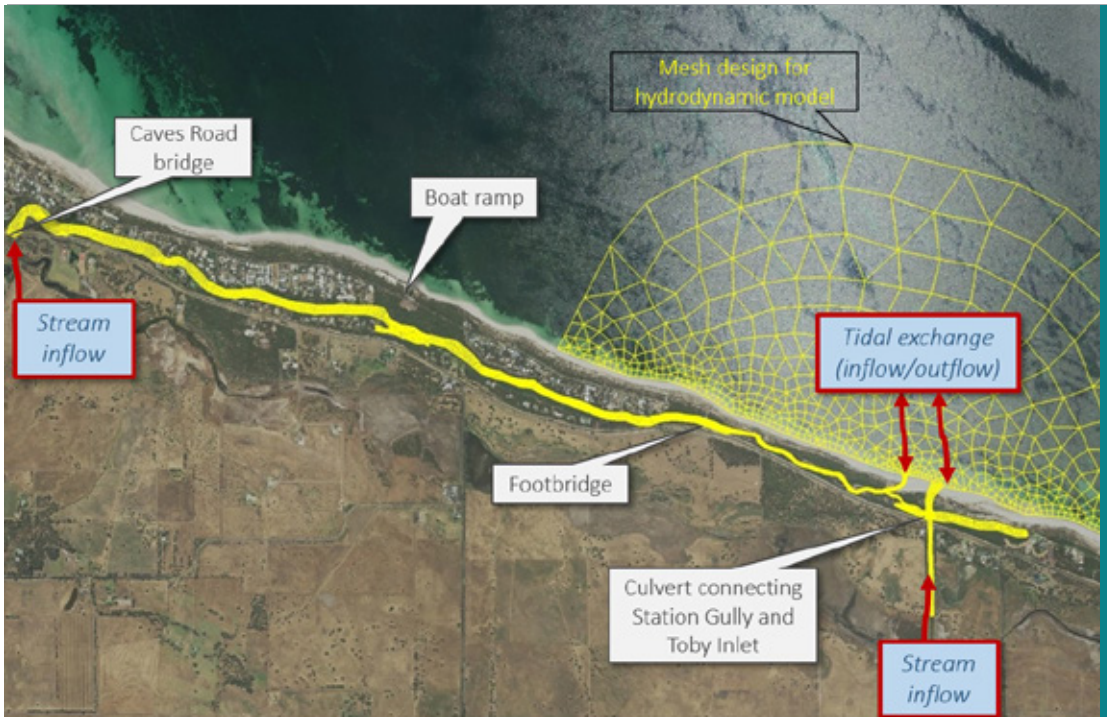
The study found the best option to maximise tidal flushing of the Inlet was to keep the sandbar mouth of the Toby Inlet open over summer months. Modelling estimated that this action would flush approximately 70 per cent of the Inlet with seawater, flushing a length almost twice as far as opening the Station Gully mouth alone.

As a direct action of this study the City of Busselton will maintain the opening of the Toby Inlet sandbar over summer months to improve tidal flushing and water quality of the Inlet.

Key features of Toby Inlet

Maintaining the opening at a height greater than -0.15 mAHD will reduce the risk of the Inlet draining on low tides. The City of Busselton have installed monitoring equipment to monitor the height of the opening over summer.

The study also investigated the option of a second bar opening upstream of the Quindalup boat ramp. Although this option would increase flushing of the Inlet it would also introduce seawater further upstream of the Inlet that may impact on freshwater ecology and wetlands upstream of Caves Road. If this option is desirable in the future the impact of seawater on freshwater ecology would need to be further explored.



A hydrodynamic model was developed by the Department of Water and Environmental Regulation to assess the different options to increase tidal flushing of the Inlet. The yellow mesh represents the model domain where water depth, salinity, temperature and flow velocity are calculated.

The study also looked at increasing the size of the culvert between Station Gully Drain and the Toby Inlet to increase water exchange between the two water bodies. Bathymetry measurements carried out as part of this study showed there is a very narrow channel between the two water bodies that naturally limits water exchange. Increasing the size of the culvert is therefore unlikely to substantially improve this exchange. The study recommended keeping the current culvert open to maintain tidal circulation between the two water bodies.

Narrow shallow channel in the Toby Inlet upstream from the Station Gully culvert.

Image courtesy of James Tweedley, Murdoch University.

Increasing flows from the catchment

Options for increasing summer flows into Toby Inlet are limited as there are no large regulated dams in the catchment or suitable sites available. An assessment of current water storage in the catchment (Dunsborough Lakes and small catchment dams) showed the storage volumes available were substantially less than what would be required to maintain flows over summer.

Approximately 5 GL (5000 ML) of water is required to maintain summer flows in the Toby Inlet. Dunsborough Lakes contains a volume of approximately 100 ML.

The study also examined the option of diverting flows from Station Gully into Toby Inlet. Station Gully drain receives more than three times the flow of Toby Inlet from the Station Gully, Annie Brook and Mary Brook streams. Water flow into both Station Gully Drain and Toby Inlet is highly seasonal with little or no flow in summer months. As well as not delivering water in summer when water quality declines the study found diverting flow from Station Gully would actually increase the nutrient loads to Toby Inlet as nutrient concentrations are higher in the drain. Flow velocities were also inadequate to scour sediment and therefore this option was not recommended.

Where to next

Key recommendations from the Reconnecting Toby Inlet study are already being implemented with the City of Busselton opening the Toby Inlet sandbar mouth in 2017. Recommendations will also inform the water management plan for the Toby Inlet being developed by the City of Busselton. These recommendations will compliment other projects and scientific studies to improve water quality in the Toby Inlet through the Revitalising Geographe Waterways program.

The Reconnecting Toby Inlet Report can be found under resources at rgw.dwer.wa.gov.au/rgw-publications/.

Toby Inlet sandbar opened in February 2018

GeoCatch

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Revitalising Geographe Waterways

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