

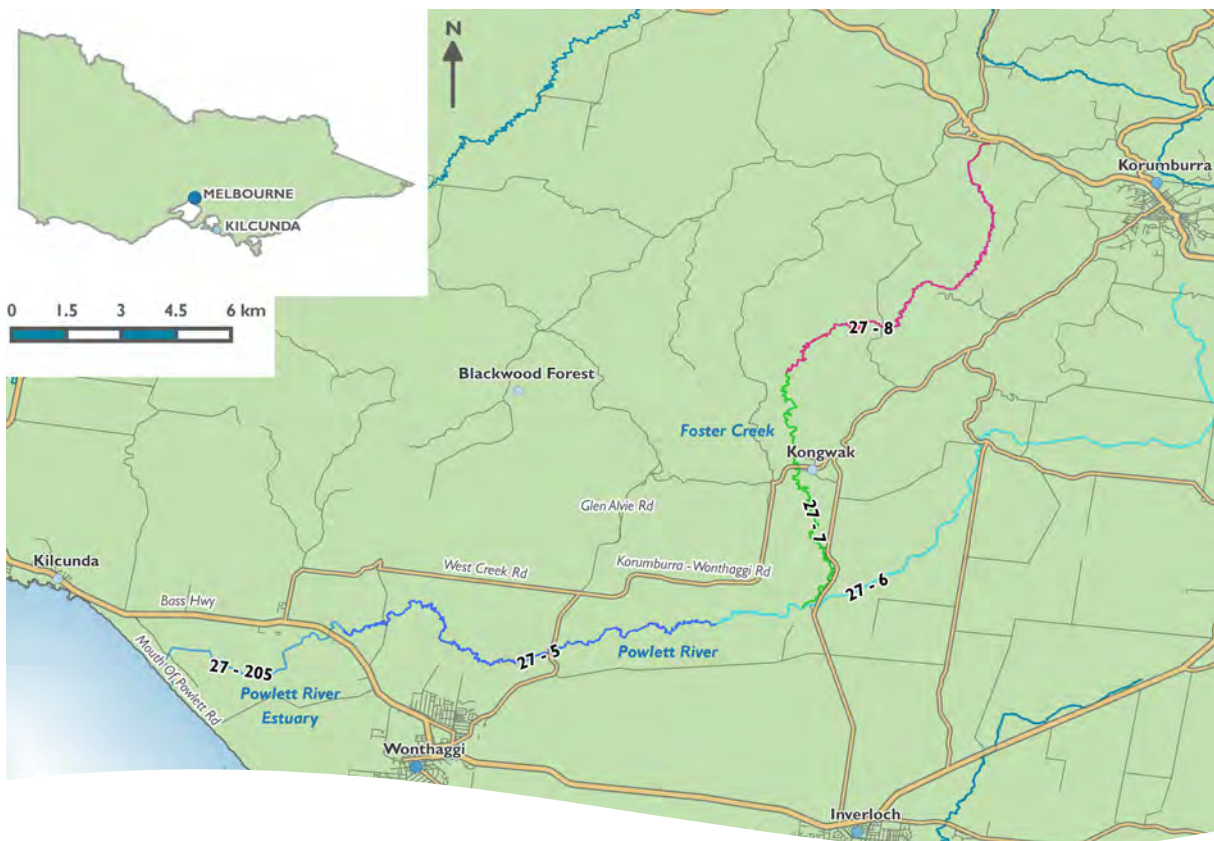


Powlett River Estuary Management Plan – Threats to the health of the Estuary

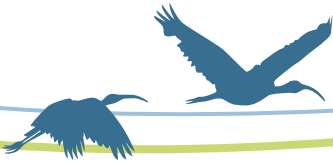
Environmental Condition

The Powlett River and estuary were assessed as part of the third Index of Stream Condition in 2010. The Powlett River catchment and estuary has been divided into five reaches (shown in the map below) to assist with management planning and for assessing environmental condition. The five reaches are:

- 27-205: Powlett River estuary to Bass Highway
- 27-5: Powlett River downstream of Lance Creek to Bass Highway
- 27-6: Powlett River upstream of Lance Creek
- 27-7: Foster Creek downstream of Burndale
- 27-8: Foster Creek upstream of Burndale



The location of the Powlett River.



The Index of Stream Condition uses five sub-indices to describe river and estuary condition; Hydrology, Physical Form, Streamside Zone, Water Quality and Aquatic Life.

- Hydrology compares the amount of water within the river channel to a reference river to determine how much this varies from natural conditions.
- Physical Form considers the river bank condition as well as instream habitats and barriers to fish migration.
- Streamside Zone measures woody vegetation along the waterway edge.
- Water Quality includes measures of phosphorous, turbidity, salinity and pH.
- Aquatic Life is based on the number and type of aquatic macroinvertebrates found within the river.

The Powlett estuary and river were found to be in poor condition. Foster Creek was found to be in moderate condition. The table below shows the sub-index score (out of 10) for each reach within the Powlett catchment.

Reach	Hydrology	Physical Form	Streamside Zone	Water Quality	Aquatic Life	ISC Score	Condition
27-5 Powlett Estuary	5	9	4	3	3	22	Poor
27-6 Powlett River	5	8	4	4	3	20	Poor
27-7 Foster Creek	6	9	6	-	4	28	Moderate
27-8 Foster Creek	6	10	5	-	3	25	Moderate

Victorian Waterway Management Strategy

The Victorian Waterway Management Strategy lists a range of threats to the health of estuaries. These include:

- Growing populations
- Unpermitted entrance mouth openings
- High levels of sediment and nutrients
- Habitat modification
- Invasion by weeds or pests
- High levels of recreational use
- Changes in water regimes
- Pollution events
- Land reclamation
- Salinisation and acidification.



Bare ground associated with pedestrian access.

Threats affecting estuary health in the Powlett catchment and estuary

Catchment Management Authorities around Victoria collect data on the values and threats to waterways using the Aquatic Values Identification and Risk Assessment (AVIRA) methodology. Data has been collected for the Powlett River and included in AVIRA. The threats identified within the Powlett River estuary that are considered *high* or *very high* are:

Pest animals (e.g. foxes, cats, Yellowfin Goby) and plants (e.g. Sea Spurge)

- Degraded water quality
- Bank instability
- Disturbance of acid sulphate soils
- Livestock access
- Altered marine exchange.

Other threats identified during field investigation include:

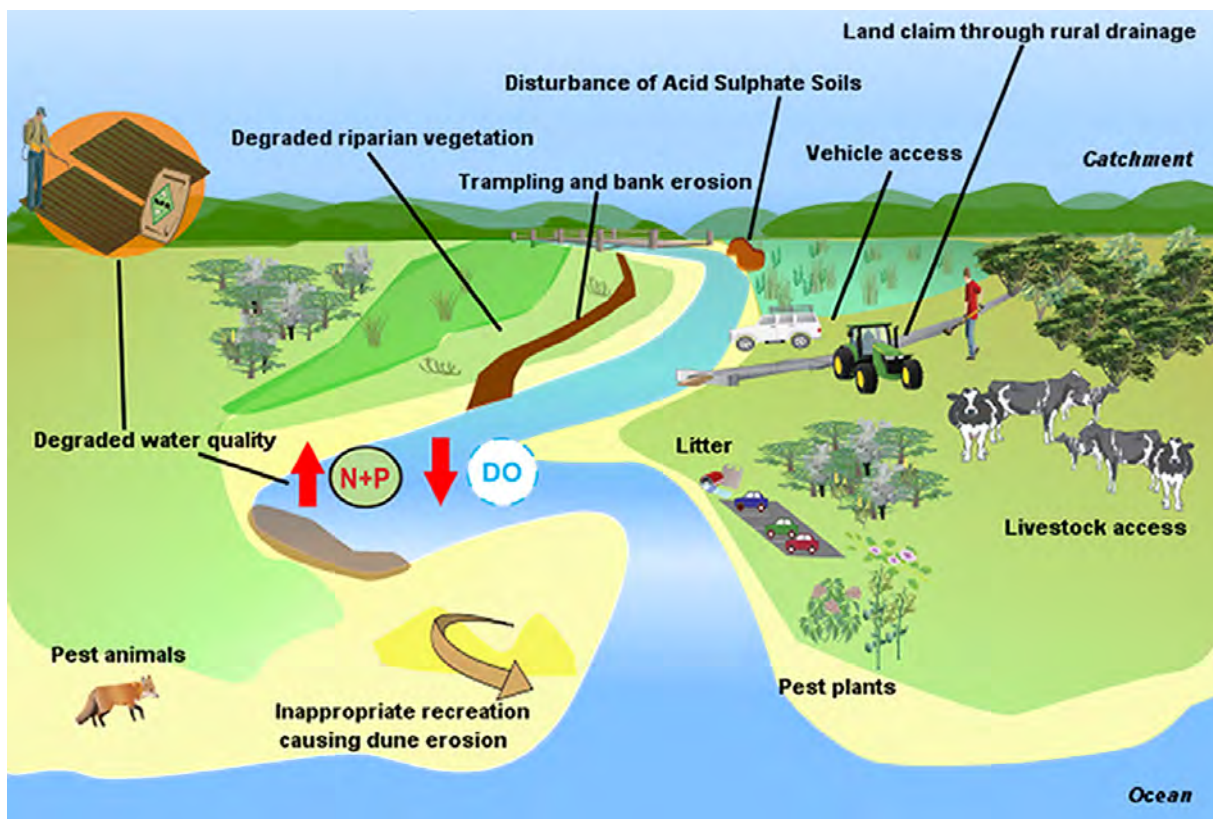
- Rural drainage and drain clearing
- Litter
- Channelisation of the river channel
- Trampling and bank erosion associated with pedestrian access.



Livestock access leaving bare ground and pugging.

Powlett River Estuary – Threats

(Please note: N = Nitrogen, P = Phosphorus and DO = Dissolved Oxygen).



Conceptual model showing threats to the condition of the Powlett Estuary.



Top: Fish barrier on the Powlett River. Above left: Threats within the catchment impact estuary health and condition. Centre: Rural drainage and stormwater can lead to water quality issues and impact the health of wetlands by changing the water regime. Right: Draining of coastal wetlands and saltmarsh can expose potential acid sulphate soils.

Threats specific to Coastal Saltmarsh Vegetation

In addition to those threats identified through AVIRA, and the fieldwork for the development of the Powlett River Estuary Management Plan, the Victorian Coastal Saltmarsh project, 2011, identified threatening processes specific to the coastal saltmarsh vegetation within the Powlett estuary and ranked the intensity of the impact. The results of this are presented in the table below.

Threat	Extent of Threat	Intensity of Impact
Land-claim	Widespread	High
Vehicle Access	Locally evident	Low
Stock Grazing	Widespread	High
Weed Invasion	Locally evident	Low
Inappropriate Recreation	Locally evident	Low
Overdevelopment	Widespread	Low
Landward Barrier (Artificial)	-	Low
Landward Barrier (Landuse)	-	-

Threats from the upstream catchment

Threats from the upstream catchment can also impact the Powlett estuary. Actions to protect the health and condition of the estuary may need to be undertaken within the catchment. The table below identifies threats to the estuary from the Powlett River and Foster Creek catchments.

Reach	Location	Threats
Powlett River (lower) Reach 27 – 5	Powlett River downstream of Lance Creek to Bass Highway	<ul style="list-style-type: none"> • degraded water quality • degraded riparian vegetation (large trees in particular) • livestock access • reduced streamside vegetation width • invasive fish
Powlett River (upper) Reach 27 – 6	Powlett River upstream of Lance Creek*	<ul style="list-style-type: none"> • degraded water quality • degraded riparian vegetation • livestock access • reduced streamside vegetation width • barriers to fish movement
Foster Creek (lower) Reach 27 – 7	Foster Creek downstream of Burndale	<ul style="list-style-type: none"> • degraded water quality • livestock access
Foster Creek (upper) Reach 27 – 8	Foster Creek upstream of Burndale	<ul style="list-style-type: none"> • reduced streamside vegetation width

*There are two barriers to fish movement in reach 27-6. The first is the streamflow gauging station at Wattle Bank and the other is the South Gippsland Water pumping station rock structure at Wonthaggi North.



The waterways in the catchment have been channelised and riparian vegetation is lacking, barriers to fish movement exist and the steep hillslopes high in the catchment have been cleared.