



Parkfield, Estuary and Coast

The land surrounding the Leschenault Estuary is divided into three catchments; Parkfield Drain, Estuary Foreshore and Coast. Located within these catchments are the townships of Bunbury, Eaton, Australind and Binningup.

Urban and uncleared land uses dominate both the Coast (89%) and Estuary Foreshore (76%) catchments, however the Coast has a larger area of urban (53%) and the Estuary Foreshore of uncleared land (52%). In contrast Parkfield Drain is mostly cleared for agriculture (62%; 38% stock grazing and 24% horticulture & viticulture). There are large pockets of natural vegetation west of the estuary and to the north-east where the Kemerton Wetland Suite is located.

There is only one non-tidal site within all three catchments, located in Five Mile Brook in the Coast catchment. Punchbowl Canal (sampling site 6121231) was sampled during the wetter months between August 2007 and October 2011, except in 2009.

Before 2010 it was thought that the sample site in Parkfield Drain was above any tidal influence and hence it was considered a catchment site. However it was discovered to be tidal, so sampling was moved above a one way valve to ensure no mixing occurred (August 2010). Unfortunately the valve is often jammed open, rendering it ineffective in restricting any tidal influence.

The remaining three sampling sites are tidal and were sampled as part of the Leschenault Estuary monitoring program (Preston 1, Estuary 3 and Estuary 4).

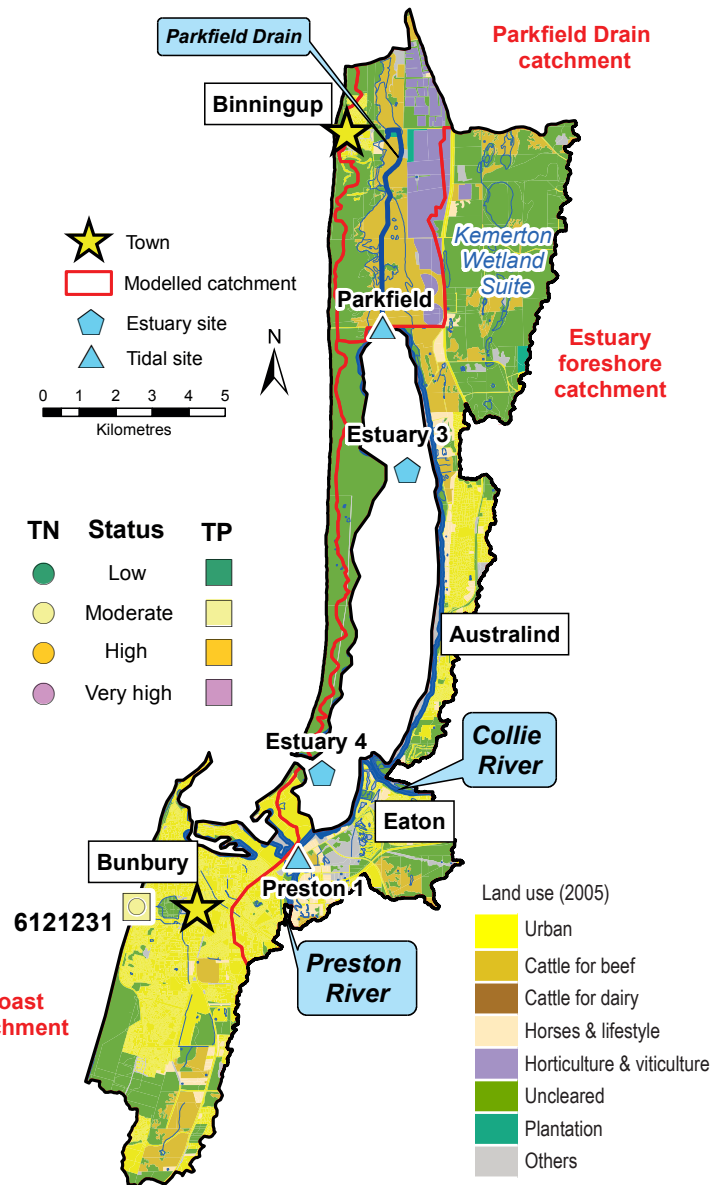
Nutrient sampling stopped at all sites in mid-2012 when funding ceased.

Status and trends

Five Mile Brook (sampling site 6121231) had a moderate status for both total nitrogen (TN) and total phosphorous concentrations (2010–11). Trend analysis could not be undertaken due to limited data.

Performance against targets

There were not enough data to allow testing against the water quality targets.



The Leschenault Estuary water quality improvement plan (WQIP) reported on each of the individual catchments due to their different land uses. The Parkfield, Estuary and Coast catchments all have a recovery classification as they failed both the TN and TP target.

Annual concentrations, flow and target performance (6121231)

| Year | 2007 | 2008 | 2009 | 2010 | 2011 |
|------------------|------|------|------|------|------|
| TN median (mg/L) | 2.0 | 2.4 | | 1.1 | 1.6 |
| TP median (mg/L) | 0.06 | 0.08 | | 0.05 | 0.07 |

insufficient data to test target passing target failing target

TN concentration target = 1.0 mg/L TP concentration target = 0.10 mg/L

Statistical tests that account for the number of samples and large data variability are used for compliance testing on three years of winter data.



Modelled nutrient loads (1998–2007)

The Estuary Foreshore catchment was the largest of the three catchments (57 km²), followed by the Coast (37 km²) and Parkfield Drain (20 km²) catchments. On average 18 tonnes of nitrogen and 1.8 tonnes of phosphorous were exported to the Leschenault Estuary each year from the Estuary foreshore catchment while 14 tonnes of nitrogen and 1.1 tonnes of phosphorus were exported to the ocean from the Coast catchment. Nutrient loads for Parkfield Drain are under review due to tidal influence at the sampling site

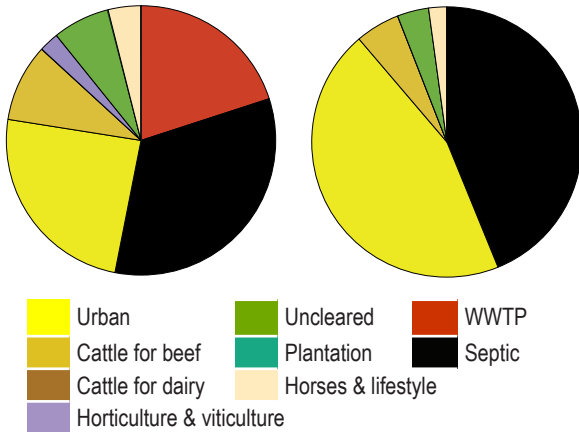
The nutrient loads in the Estuary Foreshore and Coast catchments were dominated by urban nutrient sources; urban, septic and waste water treatment plant (WWTP). Urban land use in the two catchments accounted for 35% of the area, 82% of the nitrogen and 80% of the phosphorus load.

Substantial load reductions in both nitrogen and phosphorus loads were set for the catchments to achieve water quality targets.

Nitrogen

Estuary Foreshore
annual load = 18 tonnes
load reduction target = 49%

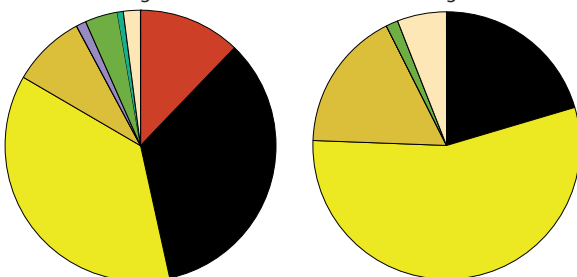
Coast
annual load = 14 tonnes
load reduction target = 58%



Phosphorus

Estuary Foreshore
annual load = 1.8 tonnes
load reduction target = 46%

Coast
annual load = 1.1 tonnes
load reduction target = 43%



The Leschenault Estuary water quality improvement plan (WQIP)

The WQIP outlines a range of management actions which have the potential to improve water quality and prevent further decline. These fall under the following categories:

- Nutrient and contaminant reduction.
- Environmental water management.
- Assess condition and measure progress.

Nutrient reduction strategies

The best management practices (BMPs) that will result in improved water quality in the Parkfield, Estuary foreshore and Coast catchments in descending order of effectiveness for N and P are as follows:

Nitrogen reduction

1. Connection of houses on septic systems to reticulated inflill sewerage.
2. Riparian zone restoration and creation of buffers (including drains).
3. Undertaking strategic retrofitting of water sensitive urban design in existing urban areas.
4. Upgrade Kemerton waste water treatment plant.

Phosphorus reduction

1. Connection of houses on septic systems to reticulated inflill sewerage.
2. Undertaking strategic retrofitting of water sensitive urban design in existing urban areas.
3. Upgrade Kemerton waste water treatment plant.
4. Use of slow release phosphorus fertiliser (when available).
5. Riparian zone restoration and creation of buffers (including drains).



Parkfield Drain

Key messages

- Water quality in Parkfield Drain exceeds ANZECC guidelines.
- Substantial reductions in both TN and TP loads are required in the Estuary and Foreshore and Coast catchments.
- Connecting houses on septic systems to reticulated, inflill sewerage is the best method to reduce both nitrogen and phosphorus concentrations and improve water quality.