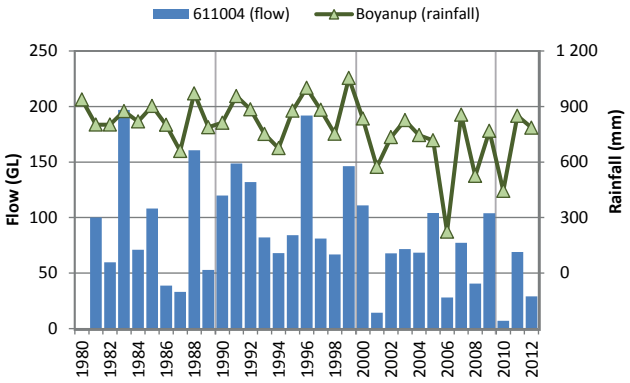
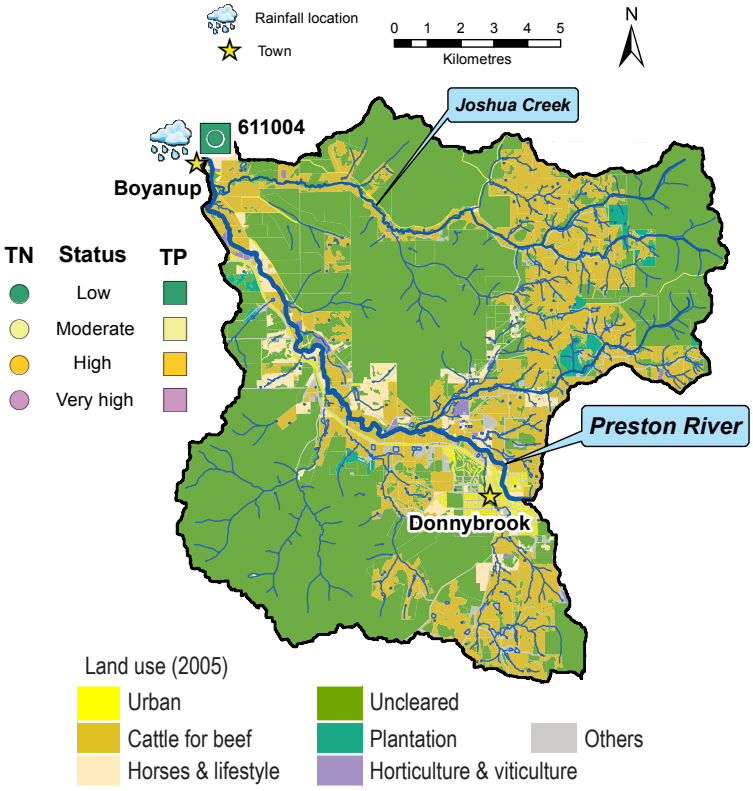
Mid Preston River

The Mid Preston catchment lies on the Darling Plateau and consists of land draining to the Preston River between Boyanup and Donnybrook. Joshua Creek drains the north of the catchment. Most of the catchment remains uncleared (e.g. Boyanup State Forest) however the land closest to the waterways and in the east has been cleared, mostly for agriculture (e.g. stock grazing).

The Preston River (gauging station 611004) was monitored for nutrients from 2004 and for flow since May 1980. Nutrient sampling stopped in mid-2012 when funding ceased. It flows year-round due to a combination of summer flow releases from Glen Mervyn Dam and natural springs in the Argyle area. Rainfall has been recorded at Boyanup (BOM) since the early 1900's. Both rainfall and flow have decreased over time.





Status and trends

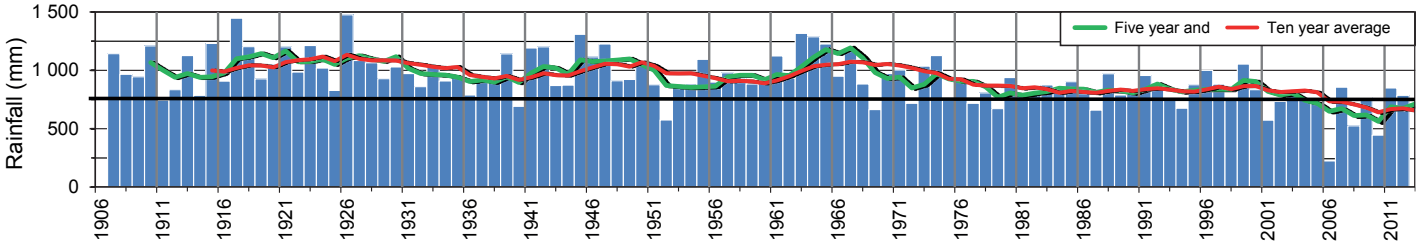
The Mid Preston River had a low nutrient status for both total nitrogen (TN) and total phosphorous (TP) (2009–11).

There was no trends in either nitrogen or phosphorus concentrations over the 2007–11 period.

Performance against targets

TN concentrations (2009–11) failed the water quality target while TP concentrations passed.

The *Leschenault Estuary water quality improvement plan* (WQIP) classified the Mid Preston as an intervention catchment as the modelled winter TN concentrations failed the target while the TP concentrations passed (1998–2007).



Rainfall at Boyanup showing a marked decrease since 2000.

Annual concentrations, flow and target performance (611004)

Year	2004	2005	2006	2007	2008	2009	2010	2011
Flow (GL)	68	104	28	77	41	104	7.1	69
TN median (mg/L)	0.45	0.48	0.30*	0.43*	0.35*	0.56	0.27*	0.26*
TP median (mg/L)	0.017	0.018	0.012	0.012	0.012	0.016	0.014	0.013

insufficient data to test target passing target failing target

TN concentration target = 0.45 mg/L TP concentration target = 0.02 mg/L

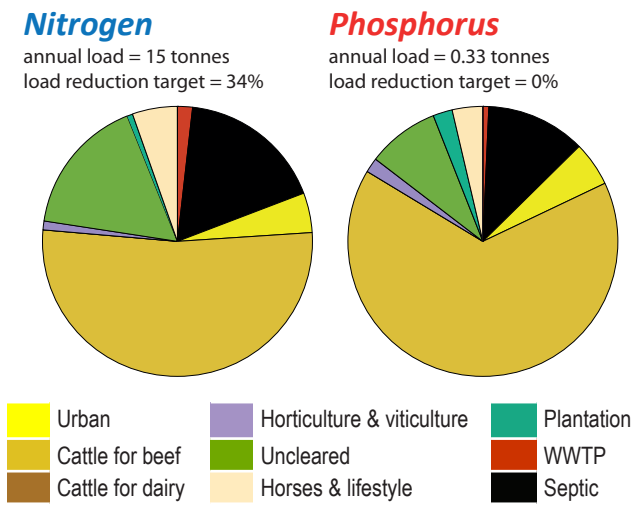
* Statistical tests that account for the number of samples and large data variability are used for compliance testing on three years of winter data. Thus the annual median value can be below the target even when the site fails the compliance test.

Modelled nutrient loads (1998–2007)

There was an average of 15 tonnes of nitrogen and 0.33 tonnes of phosphorous exported from the Mid Preston catchment each year.

Cattle for beef was the main nutrient source in the catchment accounting for 52% of the nitrogen and 66% of the phosphorus loads despite only occupying 25% of the land. The other main manageable nutrient source was from the 1180 septic tanks. These contributed slightly more nutrients than the Boyanup State Forest which covered 64% of the catchment. The remaining land uses each contributed less than 6% of the nutrient loads.

A 34% load reduction in nitrogen load was set for the Mid Preston catchment to achieve water quality targets. Phosphorus loads were considered to be acceptable.



Downstream view from the weir at Boyanup

Cattle have access to the Preston River resulting in habitat degradation and nutrient enrichment.

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 two best management practices (BMPs) that will result in the greatest improvement in water quality in the Mid Preston catchment in descending order of effectiveness for N and P are as follows:

Nitrogen reduction

1. Riparian zone restoration and creation of buffers (includes removal of stock from waterways).
2. Removal of septics.

To a lesser extent perennial pastures, better fertiliser management, slow release fertiliser (once available) and water sensitive urban design (WSUD) retrofits will also assist in reducing nitrogen loads.

Phosphorus reduction

1. Riparian zone restoration and creation of buffers (includes removal of stock from waterways).
2. Removal of septics.

Better fertiliser management, WSUD retrofit, slow release fertiliser (once available) and the adoption of perennial grasses will also assist in reducing phosphorus loads.

Key messages

- TN concentrations failed the target.
- To date, no clear progress towards reducing the nitrogen load has been detected.
- Both TN and TP status classifications were low.
- TP concentrations passed the target.
- Fencing stock from waterways and revegetating the riparian zone are the best methods for reducing nitrogen and phosphorus concentrations and improving water quality.

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For further information please contact the South West region, Department of Water
catchmentnutrients@water.wa.gov.au

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