

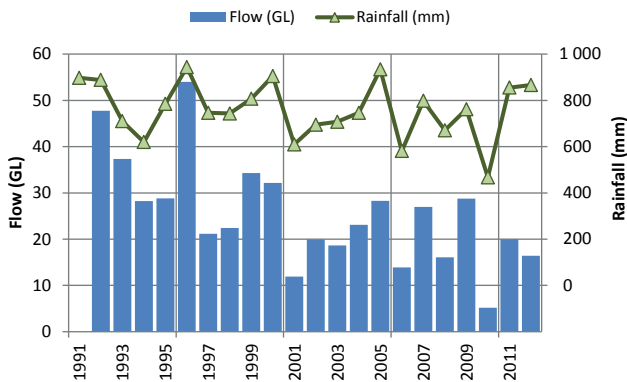
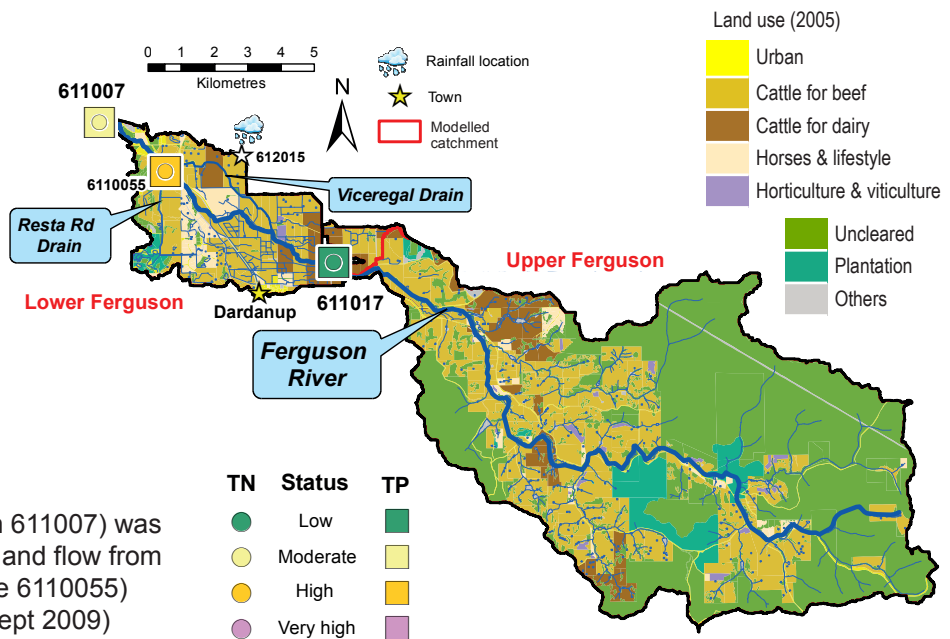


# Ferguson River

The Ferguson River catchment starts on the Darling Plateau then runs through the Swan Coastal Plain, before its confluence with the Preston River. The Lower Ferguson catchment has been cleared, mostly for agriculture (e.g. stock grazing) and lifestyle blocks (e.g. horses), while over half the Upper Ferguson catchment remains uncleared.

Three sampling sites were located within the catchment, two on the Ferguson River (one at each catchment outlet; Upper and Lower Ferguson) and another located on Resta Road Drain in the Lower Ferguson catchment.

The Lower Ferguson River (gauging station 611007) was regularly monitored for nutrients from 2004 and flow from April 1991. Resta Road Drain (sampling site 6110055) was monitored for nutrients from 2006 (except 2009) and the Upper Ferguson site (gauging station 611017) from 2008. Nutrient monitoring stopped at all three sites in mid-2012 when funding ceased. The Ferguson River flows year-round. Rainfall is recorded about 4 km north of Dardanup.



In Resta Road Drain both TN and TP were classified as moderate (2010–11) which was an improvement from 2006–08 when TN was classified as very high and TP was high.

No trends were detected in the Lower Ferguson. Trend analysis could not be undertaken at the other two sites due to insufficient data.

## Performance against targets

Both sites on the Ferguson River failed the TN water quality target but passed the TP target (2009–11). Resta Road Drain failed both the TN and TP targets (2006–08).

In the *Leschenault Estuary water quality improvement plan* (WQIP), the Ferguson River consists of two catchments: Lower and Upper Ferguson. The Lower Ferguson was classified as recovery as both TN and TP modelled winter concentrations failed the targets (1988–2007). The Upper Ferguson had an intervention classification as the modelled winter TN concentrations failed the target while TP concentrations passed (1998–2007).

## Status and trends

The Lower Ferguson had a moderate nutrient status for both total nitrogen (TN) and total phosphorous (TP) concentrations while in the Upper Ferguson both TN and TP concentrations were classified as low (2009–11).

## Annual concentrations, flow and target performance (611007)

Year	2004	2005	2006	2007	2008	2009	2010	2011
Flow (GL)	23	28	14	27	16	29	5.2	20
TN median (mg/L)	1.1	1.1	0.83*	0.85*	0.69*	1.0*	0.80*	1.0*
TP median (mg/L)	0.040	0.041	0.027	0.027	0.024	0.031	0.026	0.030

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. Thus the annual median value can be equal to or below the target concentration even when the site fails the compliance test.



## Modelled nutrient loads (1998–2007)

There was an average of 17.7 tonnes of nitrogen and 0.89 tonnes of phosphorous exported from the Upper and Lower Ferguson catchments each year.

The nutrient loads in the Ferguson catchments came from two main sources - cattle for beef and cattle for dairy. These two land uses accounted for 38% of the area, 78% of the nitrogen and 72% of the phosphorus load.

In the Lower Ferguson catchment horses & lifestyle blocks and septics contributed 18% of the nitrogen and 23% of the phosphorous load.

A 33–34% load reduction in nitrogen load was set for the Ferguson catchments to achieve water quality targets. The phosphorus load was considered acceptable in the Upper Ferguson while a 9% load reduction was set for the Lower Ferguson catchment.



## 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 top four best management practices (BMPs) that will result in improved water quality in the Ferguson 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.
3. Better fertiliser management.
4. Perennial pastures.

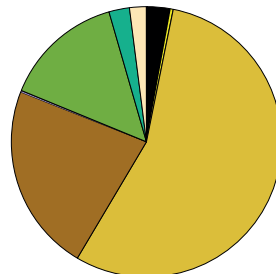
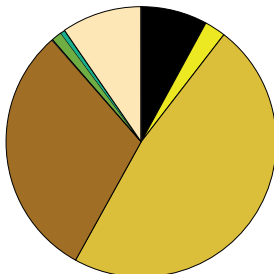
### Phosphorus reduction

1. Slow release fertiliser (once available).
2. Soil amendments (when available).
3. Riparian zone restoration and creation of buffers (includes removal of stock from waterways).
4. Better fertiliser management.

### Nitrogen

Lower Ferguson  
annual load = 9.1 tonnes  
load reduction target = 33%

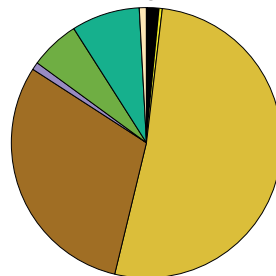
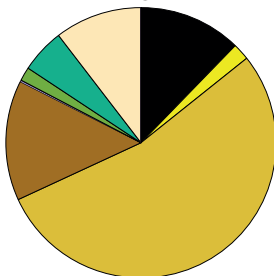
Upper Ferguson  
annual load = 8.6 tonnes  
load reduction target = 34%



### Phosphorus

Lower Ferguson  
annual load = 0.65 tonnes  
load reduction target = 9%

Upper Ferguson  
annual load = 0.24 tonnes  
load reduction target = 0%



## Key messages

- All three sites in the Ferguson River catchment failed the TN target.
- The TN status improved slightly in Resta Road Drain with the status changing from very high to high in recent years.
- Fencing stock from waterways, revegetating the riparian zone and using slow release fertilisers are the best methods for reducing nitrogen and phosphorus concentrations and improving water quality.