

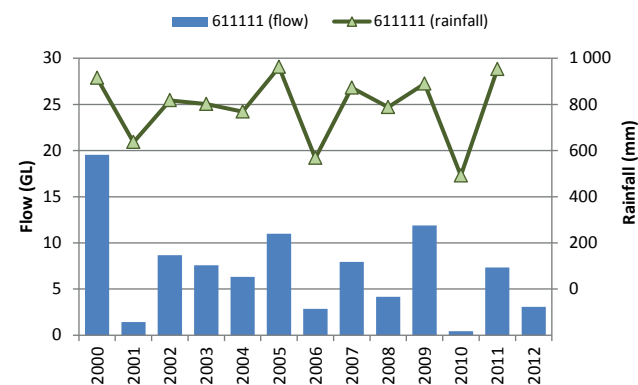


Thomson Brook

The Thomson Brook catchment lies on the Darling Plateau. It consists of land draining to the Brook upstream of the gauging station near Thomson Brook Road, approximately 1.5 km west of Forrest Road.

Most of the upper catchment remains uncleared (68%) while the lower catchment is used for agriculture (e.g. stock grazing and plantations). Of the cleared catchment 68% is used for stock grazing (beef) with a further 30% utilised for plantations.

Thomson Brook (gauging station 611111) was monitored regularly for nutrients from 2004, flow since 1957 and rainfall from 1975. Nutrient sampling at this site stopped in mid-2012 when funding ceased. The Brook ceases to flow between November and June most years, with an average of 135 days per year with no flow (2004–12). The summer of 1969–70 had the longest period with no flow recorded (200 days; November to May).

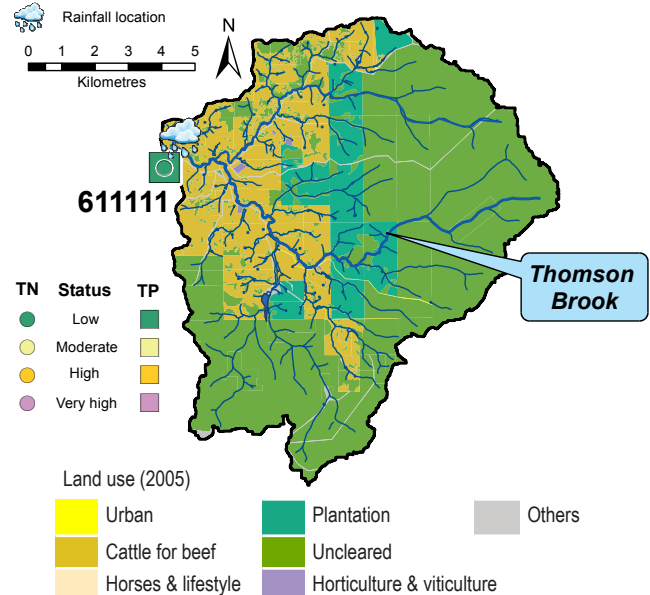


Status and trends

Thomson Brook had a low nutrient status (2009–11) for both total nitrogen (TN) and total phosphorous (TP).

No long-term (2004–11) trend in TN concentration was detected however there was an emerging increasing trend in TP concentration (0.001 mg/L/yr). In recent years (2007–11) TN concentrations showed an emerging increasing trend (0.055 mg/L/yr) while no TP trend was detected.

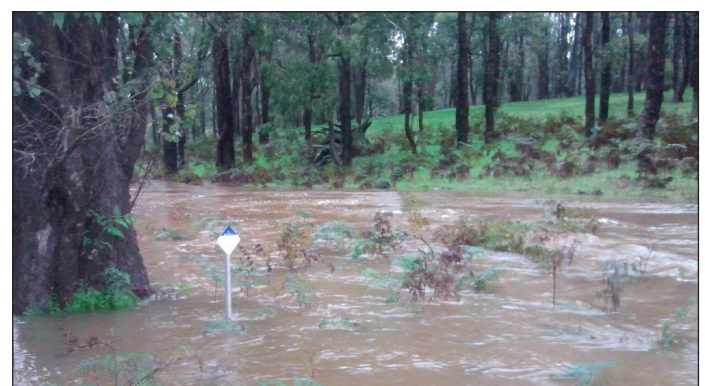
Thomson Brook catchment



Performance against targets

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

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



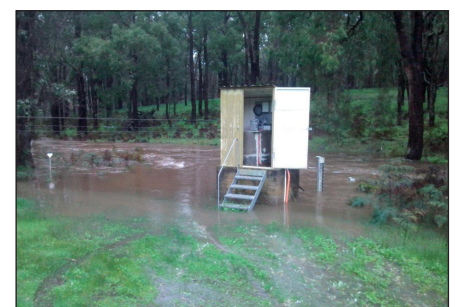
Annual concentrations, flow and target performance (611111)

Year	2004	2005	2006	2007	2008	2009	2010	2011
Flow (GL)	6.3	11	2.8	7.9	4.2	12	0.45	7.3
TN median (mg/L)	0.67	0.62	0.71	0.70	0.49	0.90	0.55	0.97
TP median (mg/L)	0.013	0.018	0.015	0.020*	0.016	0.020*	0.018	0.020*

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 equal to or exceed the target even when the site passes the compliance test.



Modelled nutrient loads (1998–2007)

The Thomson Brook catchment had the second-lowest nutrient loads within the Leschenault catchment. There was an average of 4.3 tonnes of nitrogen and 0.11 tonnes of phosphorous exported from the catchment each year. A percentage of the nutrient loads came from natural processes occurring in state forest which covered 63% of the catchment (0.97 tonnes of nitrogen, 22% and 0.01 tonnes of phosphorus, 10%).

The manageable nutrient loads in the catchment came from two main sources - cattle for beef and plantation. These two land uses accounted for 35% of the area, 77% of the nitrogen and 89% of the phosphorus load. Other land uses within the catchment accounted for approximately 2.0% of the area and combined with septic tanks contributed only minimal loads (0.74% TN and 1.2% TP).

To achieve water quality targets a 6% reduction in nitrogen load was set for the Thomson Brook catchment. Phosphorous loads were considered acceptable.

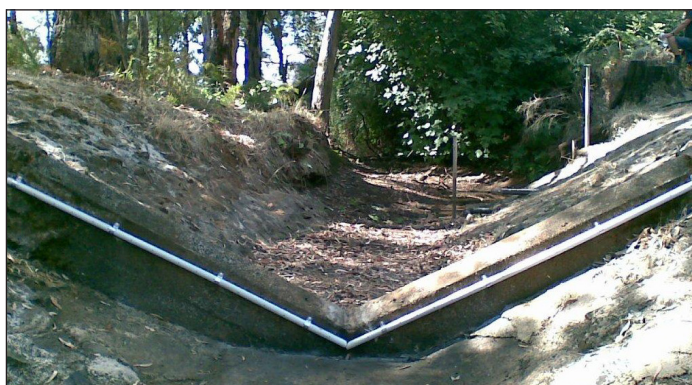
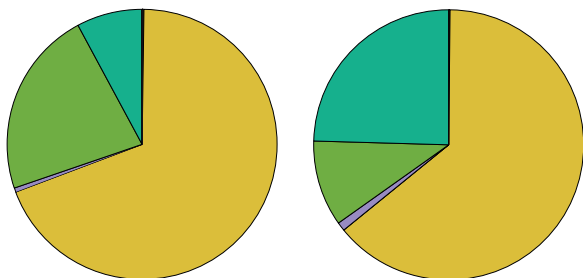


Nitrogen

annual load = 4.3 tonnes
load reduction target = 6%

Phosphorus

annual load = 0.11 tonnes
load reduction target = 0%



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 Thomson Brook 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. Perennial pastures.
3. Better fertiliser management.

Phosphorus reduction

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

Key messages

- Thomson Brook failed the TN water quality target and had an emerging increasing trend in TN concentrations (2007–11).
- TN and TP status classifications were low.
- TP concentrations were passing the water quality targets.
- Fencing stock from waterways and revegetating the riparian zone are the best methods for reducing nitrogen and phosphorus concentrations and improving water quality.