



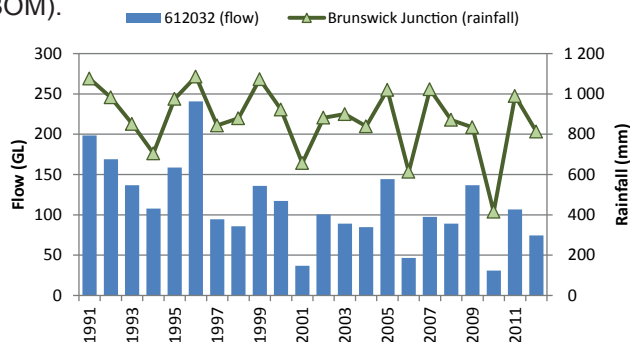
# Tidal and Mid Brunswick River

The Tidal and Mid Brunswick catchment lies predominantly on the Swan Coastal Plain and consists of land draining to the Brunswick River downstream of South West Highway at Brunswick Junction including the Wellesley River downstream of Devlin Road.

To the east of the Wellesley River most of the Mid Brunswick catchment has been cleared, largely for agriculture (e.g. stock grazing) and is heavily irrigated. To the west of the Wellesley River large areas of undisturbed vegetation remains, including the ecologically important Kemerton Wetlands Suite.

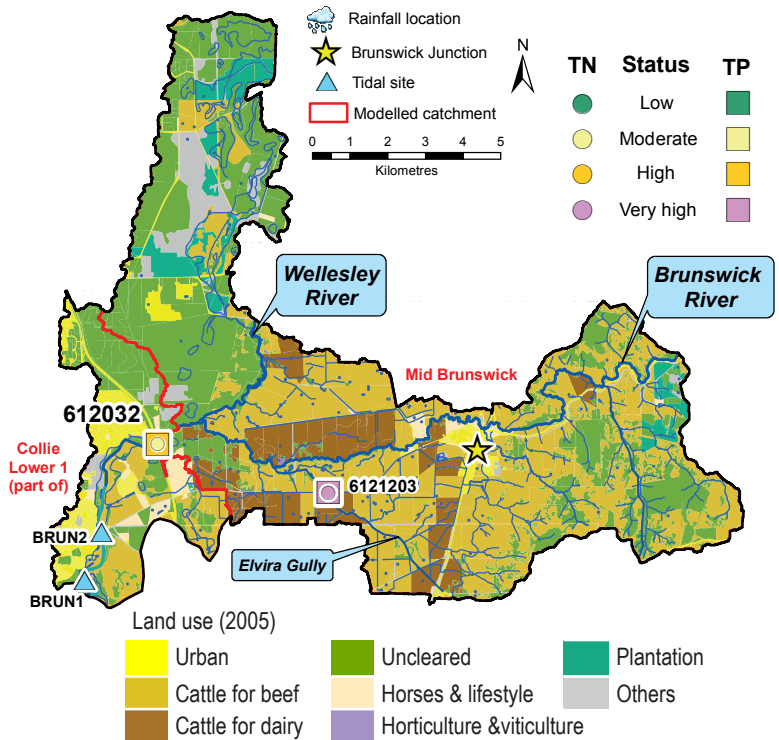
Two sampling sites are located within the Mid Brunswick catchment, one of which has flow recorded (gauging station 612032). The Brunswick River (gauging station 612032 at Forrest Highway) was monitored regularly for nutrients from 1998 and flow from June 1990. In October 2004 nutrient monitoring started in Elvira Gully (sampling site 6121203). Nutrient sampling stopped at both sites in mid-2012 when funding ceased.

The Brunswick River flows year-round. Rainfall is recorded around 4.5 km north of Brunswick Junction (BOM).



Two sites located in the tidal portion of the Brunswick River were also sampled as part of the Leschenault Estuary monitoring program (BRUN1 and BRUN2). Detailed results will be presented in an estuarine nutrient report, however, between 2007–11, surface nutrient concentrations exceeded ANZECC 2000 guidelines for

2007–11 (October–May)	BRUN1	BRUN2
Total nitrogen (TN) > 0.75 mg/L	71%	80%
Total phosphorus (TP) > 0.03 mg/L	92%	97%



the protection of estuarine systems at both sites for most of the dry season (October–May).

## Status and trends

The Brunswick River had a moderate TN status and a high TP status (2009–11). Nutrient concentrations were higher in Elvira Gully which had a very high status for both TN and TP.

No trends were detected at either site.

## Performance against targets

TN and TP winter concentrations (2009–11) failed the water quality targets at both sites.

The *Leschenault Estuary water quality improvement plan* (WQIP) classifies the Mid Brunswick catchment as a recovery catchment as modelled winter TN and TP concentrations failed the water quality targets (1998–2007).

## Annual concentrations, flow and target performance (612032)

Year	2004	2005	2006	2007	2008	2009	2010	2011
Flow (GL)	85	144	47	97	89	137	31	107
TN median (mg/L)	1.3	1.1	1.1	1.2	1.2	1.3	1.2	1.2
TP median (mg/L)	0.17	0.11	0.11*	0.13	0.12	0.13	0.11	0.12

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 above the target even when the site passes the compliance test.



## Modelled nutrient loads (1998–2007)

There was an average of 21 tonnes of nitrogen and 3.3 tonnes of phosphorous exported from the Tidal and Mid Brunswick catchment each year.

The nutrient loads in the Tidal and Mid Brunswick catchment came from two main sources - cattle for beef and cattle for dairy. These two land uses accounted for 50% of the area, 75% of the nitrogen and 62% of the phosphorus load. Point sources also accounted for a further 16% of the nitrogen and 25% of the phosphorus loads.

Within the catchment cattle for dairy occupied approximately a quarter the area of cattle for beef however contributed 8% more phosphorus load.

A 19% reduction in nitrogen and a 50% reduction in phosphorus loads is required for the catchment to achieve the water quality targets.



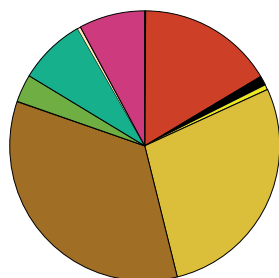
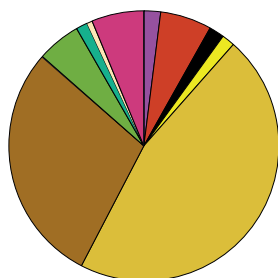
Pelicans resting on a sandbar in the Brunswick River

### Nitrogen

annual load = 21 tonnes  
load reduction target = 19%

### Phosphorus

annual load = 3.3 tonnes  
load reduction target = 50%



## 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 key best management practices (BMPs) that will result in improved water quality in the Tidal and Mid Brunswick 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. Dairy effluent management.
3. Removal of Department of Environmental Regulation -licensed point sources.
4. Better fertiliser management.
5. Perennial pastures.

#### Phosphorus reduction

1. Soil amendments (when available).
2. Waste water treatment plant upgrades.
3. Dairy effluent management.
4. Slow release fertiliser (once available).
5. Riparian zone restoration and creation of buffers (includes removal of stock from waterways).
6. Better fertiliser management.

## Key messages

- TN and TP concentrations failed the water quality targets at both sites in the Mid-Brunswick catchment.
- Elvira Gully had the highest median TP concentration (2011) in the Leschenault catchment and one of the highest median TN concentrations.
- Fencing stock from waterways, revegetating the riparian zone and using approved soil amendments are the best methods for reducing nitrogen and phosphorus concentrations and improving water quality.