



Leschenault catchment summary

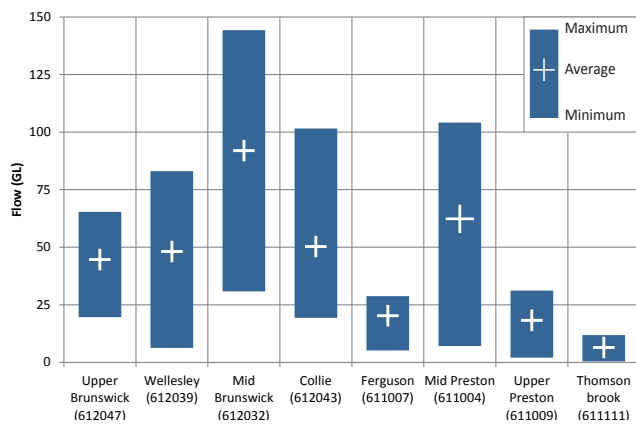
The Leschenault catchment starts on the Darling Plateau and drains to the Leschenault Estuary. The major river systems within the catchment are the Preston, Ferguson, Collie, Brunswick and Wellesley rivers.

Water quality monitoring has been sporadic with only a few sites having long term datasets. All nutrient monitoring stopped in mid-2012 when funding ceased. These nutrient reports focus on total nitrogen (TN) and total phosphorus (TP) data collected from 2004 to 2011 and are part of a series presenting similar information for some of the south-west catchments.

Flow and rainfall

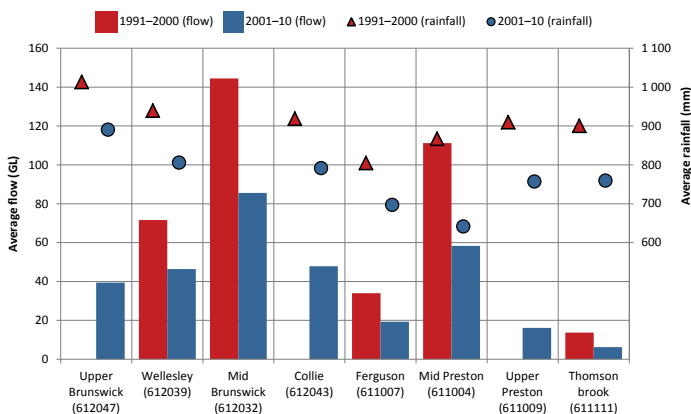
Flow has been recorded at Thomson Brook since 1958 and Mid Preston since 1980 with the other sites starting between 1991 and 2001. Rainfall records go back to the early 1900s at some sites however there were none near the coast until 1995 in Bunbury and Australind in 2010.

On average the mid Brunswick River (gauging station 612032) had the largest total annual flows while Thomson Brook (gauging station 611111) had the lowest.

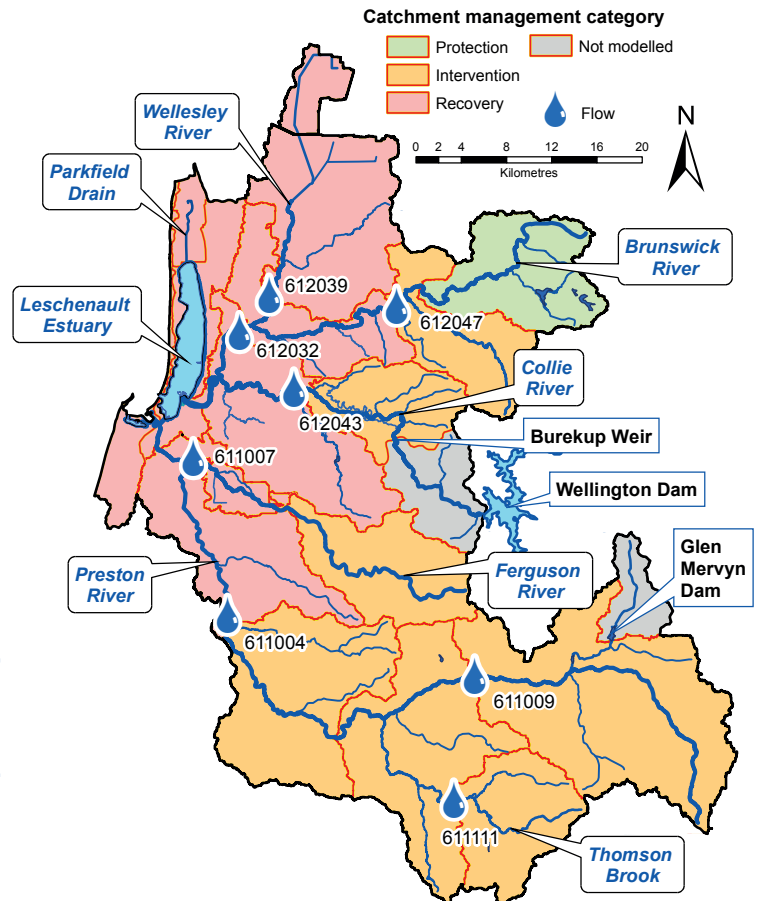


Annual flow at gauging stations in the Leschenault catchment (2004–2011).

When comparing total annual flows between 1991–2000 and 2001–10, average flows decreased by between 35% (Wellesley River, gauging station 612039) and



Average flow and rainfall: comparison between 1991–2000 and 2001–2010.



55% (Thomson Brook, gauging station 611111). Rainfall also decreased in the catchment, between 12% (Upper Brunswick) and 26% (Mid Preston).

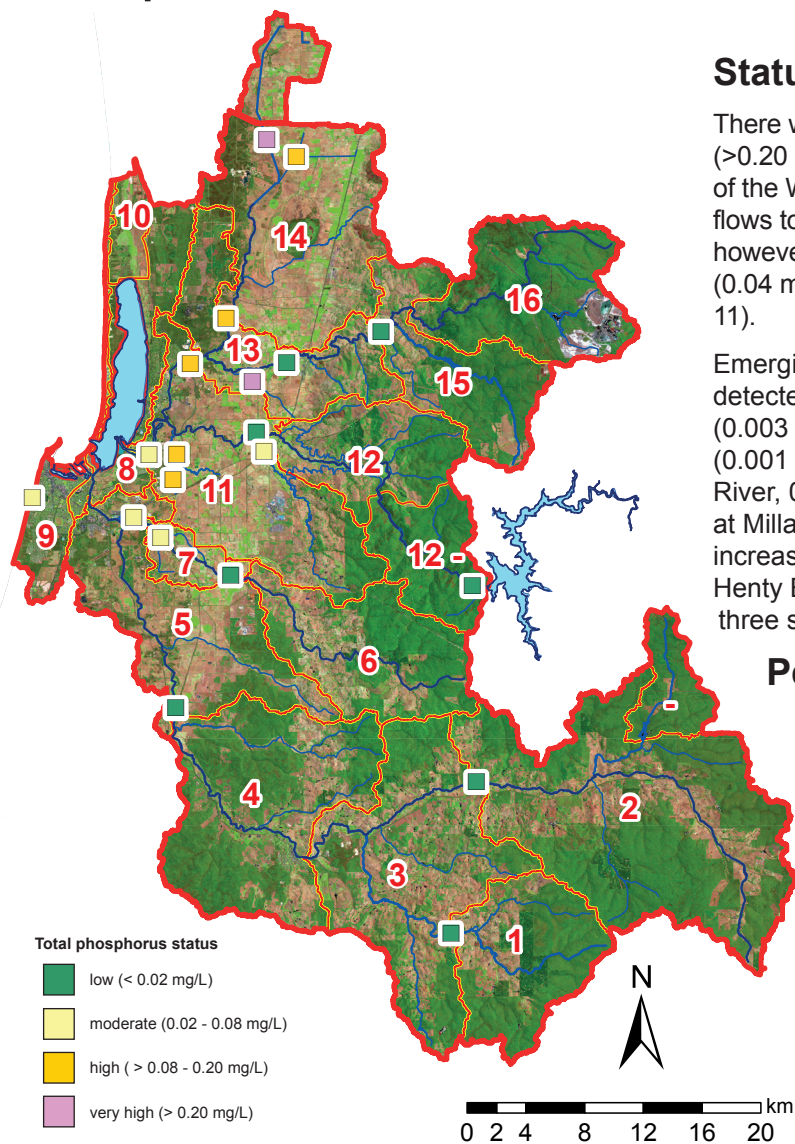
Management category

The Leschenault Estuary water quality improvement plan (WQIP) divided the Leschenault into 16 catchments. The hydrological and nutrient models utilised land use, flow and sampling data (1998–2007) to determine nitrogen (TN) and phosphorus (TP) concentrations and loads exported from the catchments. Modelled winter TN and TP concentrations were used to assess each catchment's compliance against water quality targets (TN and TP) developed for the WQIP to measure progress towards reducing nutrient loads.

Only one catchment, the Brunswick Upper 2, fell under a protection classification, passing both the TN and TP targets. The other catchments on the Darling Plateau were classified as intervention, passing the TP target but failing the TN.

The catchments on the Swan Coastal Plain were given a recovery classification as they failed both the TN and TP targets.

Phosphorus - overall summary



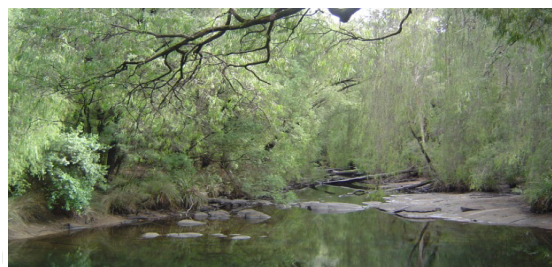
Status and trends

There were two sites with a very high TP status (>0.20 mg/L); Mangosteen Drain in the upper reaches of the Wellesley catchment and Elvira Gully which flows to the Brunswick River. Mangosteen Drain did, however, have the only emerging decreasing TP trend (0.04 mg/L/yr) within the Leschenault catchment (2007–11).

Emerging increasing trends in TP concentrations were detected at five sites, one in the upper Brunswick (0.003 mg/L/yr) and four in the Collie catchments (0.001 mg/L/yr at both Wellington Flume and Collie River, 0.003 mg/L/yr at Henty Brook and 0.015 mg/L/yr at Millars Creek). Of the five sites that had an emerging increasing trend Millars Creek had a high TP status, Henty Brook had a moderate TP status, while the other three sites all had a low TP status.

Performance against targets

Overall, more than half of the sites passed the TP target, however all sites within the Mid Brunswick and Wellesley catchments failed along with one minor tributary in the Lower Ferguson.



	Catchment name	Site (AWRC)	TP Target (2009–11)	TP Trend (2007–11)
1	Thomson Brook	611111	passing nutrient target	—
2	Upper Preston	611009	passing nutrient target	—
3	Preston-Donnybrook	na	na	na
4	Mid Preston	611004	passing nutrient target	na
5	Lower Preston	na	na	na
6	Upper Ferguson	611017	passing nutrient target	na
7	Lower Ferguson	611007	passing nutrient target	—
	Tributary	6110055	failing nutrient target (2006–08)	na
8	Estuary	na	na	na
9	Coast	na	na	na
	Punchbowl Canal	6121231	na	na
10	Parkfield Drain	na	na	na
11	Collie Lower 1	na	na	na
	Hands Creek	6121226	failing nutrient target (2006–08)	na
	Millars Creek	6121225	passing nutrient target	emerging increasing trend
	Paradise Creek	6121230	na	na

	Catchment name	Site (AWRC)	TP Target (2009–11)	TP Trend (2007–11)
12	Collie Lower 2	612043	passing nutrient target	emerging increasing trend
	Henty Brook	6121222	passing nutrient target	emerging increasing trend
12 -	Wellington Flume	612013	passing nutrient target	emerging increasing trend
13	Mid Brunswick	612032	failing nutrient target	—
	Elvira Gully	6121203	failing nutrient target	—
14	Wellesley	612039	failing nutrient target	na
	Wellesley diversion	6121220	failing nutrient target (2006–08)	na
	Mangosteen Drain	6121184	failing nutrient target	emerging decreasing trend
15	Brunswick Upper 1	612047	passing nutrient target	emerging increasing trend
16	Brunswick Upper 2	na	na	na



Nitrogen - overall summary

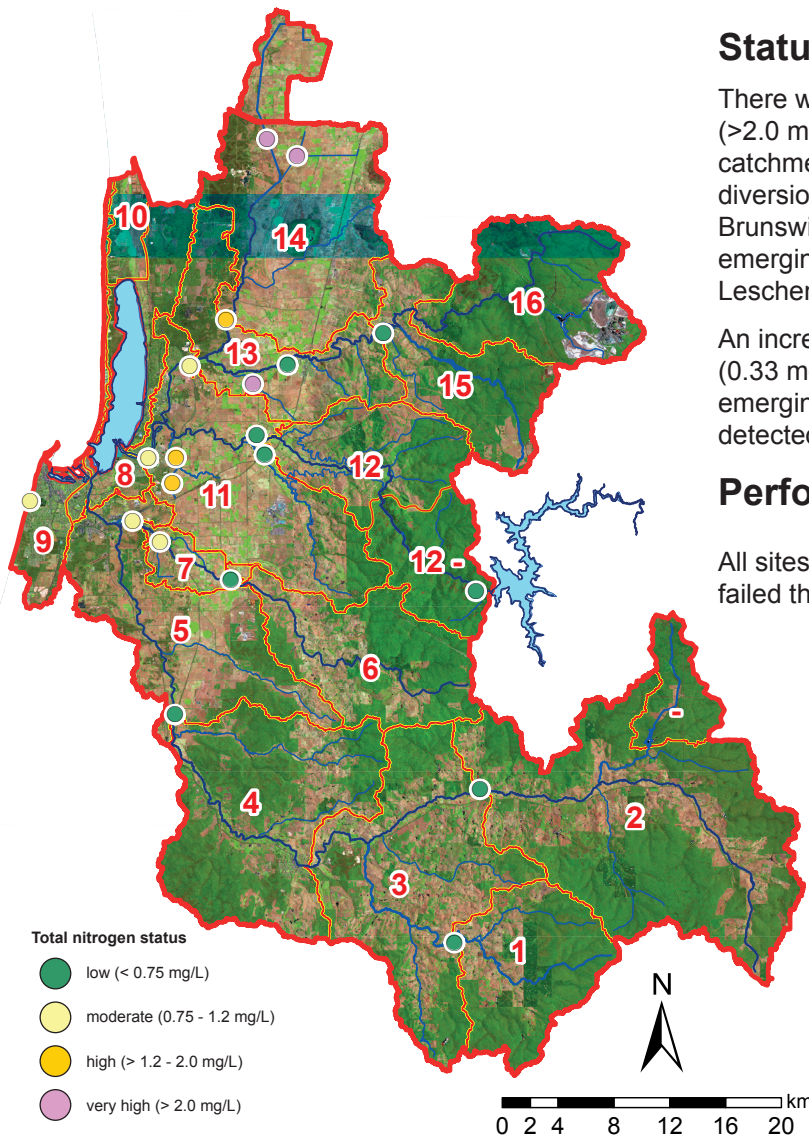
Status and trends

There were three sites with a very high TN status (>2.0 mg/L); two in the upper reaches of the Wellesley catchment (Mangosteem Drain and the Wellesley River diversion) and the other on Elvira Gully which flows to the Brunswick River. Elvira Gully did however have the only emerging decreasing TN trend (0.17 mg/L/yr), within the Leschenault catchment (2007–11).

An increasing TN trend was detected at Henty Brook (0.33 mg/L/yr) in the Collie Lower 2 catchment; and an emerging increasing trend in TN concentrations was detected in Thomson Brook (0.055 mg/L/yr).

Performance against targets

All sites except Wellington Flume and Brunswick Upper failed the TN target.



	Catchment name	Site (AWRC)	TN Target (2009–11)	TN Trend (2007–11)
1	Thomson Brook	611111		↗
2	Upper Preston	611009		—
3	Preston-Donnybrook	na	na	na
4	Mid Preston	611004		na
5	Lower Preston	na	na	na
6	Upper Ferguson	611017		na
7	Lower Ferguson	611007		—
	Tributary	6110055	(2006–08)	na
8	Estuary	na	na	na
9	Coast	na	na	na
	Punchbowl Canal	6121231	na	na
10	Parkfield Drain	na	na	na
11	Collie Lower 1	na	na	na
	Hands Creek	6121226	(2006–08)	na
	Millars Creek	6121225		—
	Paradise Creek	6121230	na	na

	Catchment name	Site (AWRC)	TN Target (2009–11)	TN Trend (2007–11)
12	Collie Lower 2	612043		—
	Henty Brook	6121222		↗
12 -	Wellington Flume	612013		—
13	Mid Brunswick	612032		—
	Elvira Gully	6121203		↘
14	Wellesley	612039		na
	Wellesley diversion	6121220	(2006–08)	na
	Mangosteem Drain	6121184		—
15	Brunswick Upper 1	612047		—
16	Brunswick Upper 2	na	na	



Nutrient sources - summary (1998–2007)

	Catchment draining to estuary and ocean	Area (km ²)	Area (%)	TN load (tonnes/year)	TN load (%)	TP load (tonnes/year)	TP load (%)
1	Thomson Brook	102	5.4	4.3	1.4	0.11	0.39
2	Upper Preston	289	15	11	3.5	0.25	0.90
3	Preston - Donnybrook	196	10	17	5.5	0.40	1.4
4	Middle Preston	186	9.8	15	4.7	0.33	1.2
5	Lower Preston	146	7.7	48	15	6.0	22
6	Upper Ferguson	114	6.1	8.6	2.8	0.24	0.86
7	Lower Ferguson	23	1.2	9.1	2.9	0.65	2.3
8	Estuary foreshore	57	3.0	18	5.8	1.8	6.5
10	Parkfield Drain	20	1.1	under review		under review	
11	Collie Lower 1	164	8.7	56	18	6.5	23
12	Collie Lower 2	82	4.3	13	4.2	0.43	1.6
13	Middle Brunswick	99	5.2	21	6.6	3.2	12
14	Wellesley	201	11	76	24	7.4	27
15	Brunswick Upper 1	93	4.9	4.9	1.6	0.12	0.44
16	Brunswick Upper 2	117	6.2	3.5	1.1	0.08	0.27
	Total to estuary	1 889		305		28	
9	Coast	37		14		1.1	

Nearly half of the Leschenault catchment is uncleared. Cattle (beef) is the largest industry in the catchment accounting for 33% of the area; it is also the largest nutrient source. Cattle for dairy also contributes substantial nutrient loads despite occupying a relatively small area.

The Wellesley catchment contributed the greatest nitrogen and phosphorus load to the estuary followed by the Collie Lower 1 and the Lower Preston.

The coastal catchments varied greatly from the rest of the Leschenault due to large areas covered by either urban land use (Estuary foreshore, Coast) or horticulture (Parkfield Drain). Their nutrient sources were dominated by a combination of diffuse sources (urban and horticulture) and point sources (septics and waste water treatment plant (WWTP)).

Percentages are to the estuary only (excludes coastal catchment (9) which drains to the ocean).

