Department of **Water and Environmental Regulation**
Department of **Biodiversity, Conservation and Attractions**
GOVERNMENT OF WESTERN AUSTRALIA

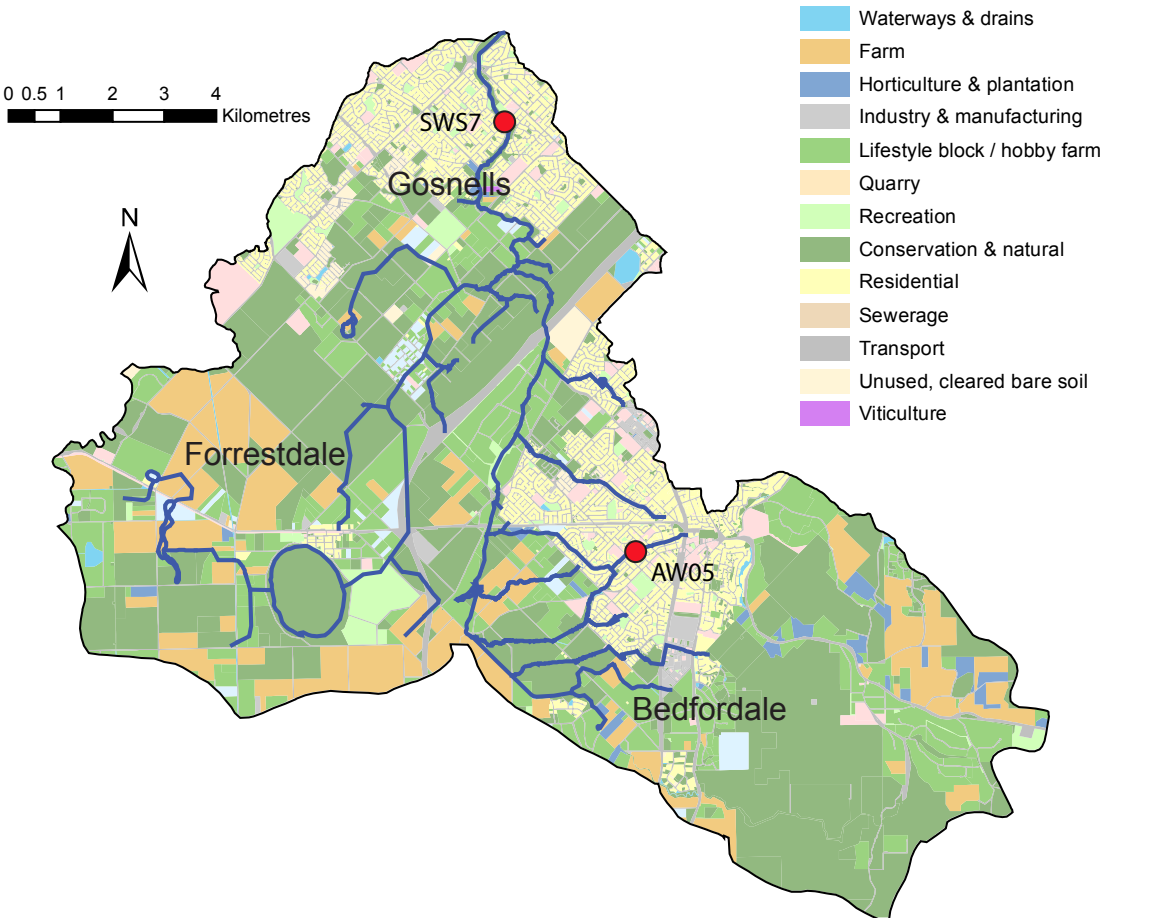
Southern River

Southern River is a natural river system that begins at the confluence of Wungong Brook and Neerigen Brook (North Drain) and flows into the Canning River near the Burslem Drive Bridge in Gosnells. It is fed by several drains and natural waterways and contributes the greatest volume of water (about 36%) of the Canning Estuary tributaries for which there is flow data. Although Southern River is not dammed, one of its major tributaries, Wungong Brook, has a dam on it.

Semi-rural activities dominate the Southern River catchment. Some bushland, such as Bungendore Park, remains in the upper catchment while the lower catchment is highly urbanised. Many wetlands are found in the catchment, most of which are surface expressions of the groundwater. Much of the rural land in the catchment has been earmarked for urban development, which is rapidly progressing.

Soils in the catchment consist of permeable Bassendean and Southern River sands, while further east the soils are primarily Guildford duplex soils and red earths. The hills soils in the catchment's far east are mainly Dwellingup sands and gravels. The Southern River receives discharge from large regional groundwater systems in the west through an extensive seasonally waterlogged plain and system of drains. This groundwater maintains streamflow during summer and it is only during successive low-flow years that the river ceases to flow. On the sand plain, groundwater bores are used extensively as public and private water supplies for irrigation, industrial and domestic purposes.

Water quality is monitored fortnightly at two sites; the Department of Water and Environmental Regulation gauging station, located just above the confluence with the Canning River and on Neerigen Brook on Seventh Avenue in Armadale. The first site is positioned to indicate the nutrients leaving the catchment and entering the estuary, whereas the second gives an indication of nutrients in upstream areas. There were no flow data available in 2017.



Southern River – facts and figures

Average rainfall (2013–17)	~ 730 mm per year (Perth metro)
Catchment area	149 km^2
Per cent cleared area (2005)	60%
River flow	Permanent, only dries after a series of low rainfall years. Wungong Reservoir is situated on Wungong Brook, one of the major tributaries
Average annual flow	~ 11.6 GL per year (2012–16 average)
Main land uses (2005)	Conservation and natural, farms, unused cleared grassed areas and residential.

Nutrient Summary: concentrations, estimated loads and targets

Year	Site	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Annual flow (GL)	616092	14.9*	19.0*	17.4*	5.9*	20.4*	9.5*	12.6*	12.6*	7.8*	15.5*	
TN median (mg/L)	SWS7	0.99#	1.15	1.20	1.25	1.20	1.10	1.30	1.30	1.10	1.40	1.30
TP median (mg/L)	SWS7	0.115	0.150	0.140	0.150	0.140	0.125	0.170	0.160	0.135	0.140	0.140
TN load (t/yr)	SWS7	21.81*	28.57*	26.17*	7.86*	31.15*	11.92*	18.71*	18.63*	11.09*	23.64*	
TP load (t/yr)	SWS7	2.66*	3.66*	3.25*	0.97*	3.92*	1.49*	2.37*	2.25*	1.32*	2.62*	
TN median (mg/L)	AW05	0.60			0.37	0.59	0.48	0.41	0.45	0.42	0.44	0.37
TP median (mg/L)	AW05	0.014			0.012	0.016	0.013	0.016	0.015	0.021	0.014	0.018

TN short term target = 2.0 mg/L TN long term target = 1.0 mg/L TP short term target = 0.2 mg/L TP long term target = 0.1 mg/L

insufficient data to test target failing both short and long-term target passing short but failing long-term target passing both short and long-term target

* Best estimate using available data. # Statistical tests that account for the number of samples and large data variability are used for testing against targets on three years of winter data. Thus the annual median value can be above the target even when the site passes the target (or below the target when the site fails).

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