

Bickley Brook

Bickley Brook is a natural system at its headwaters in the Darling Scarp, but changes to a deeply incised drain on the Swan Coastal Plain. It discharges into the Canning River in Maddington, upstream of the Kent Street Weir. The Bickley Brook catchment is 21 km², however the upstream Munday Brook catchment (not shown on map) also contributes flow to the Canning River through Bickley Brook, leading to a total catchment area of 72 km².

Much of the catchment has been cleared for agriculture and urban development. There is some remnant vegetation in poor condition at the top of the catchment. A large quarry is situated at the top of the catchment, near the southern edge. Erosion is a significant problem along firebreaks, roadsides, embankments and drainage lines. Weed infestation along watercourses is also widespread.

Bickley Brook flows west from the steep slopes and incised valleys of the Darling Scarp. Soils here are predominantly shallow red and yellow earths with rock outcrops. Moving west the brook passes through gravelly and sandy Forrestfield soils in the foothills of the scarp. Further west the brook is deeply incised into yellow duplex Guildford soils, finally intersecting a small area of alluvial red earth adjoining the Canning River. The catchment's soils have a relatively high capacity to retain nutrients. Groundwater in the catchment's coastal plain portion is reasonably shallow (approximately 4 m or less).

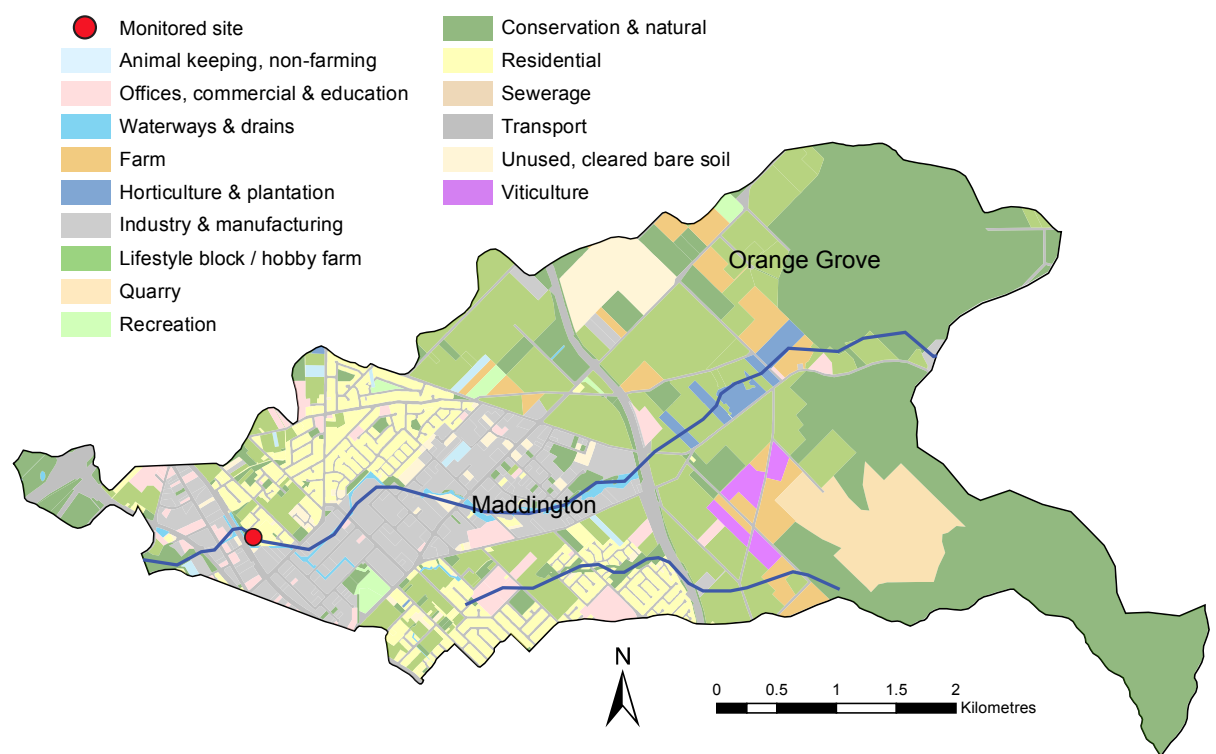
Water quality is monitored at a site near the brook's lower end, close to Austin Avenue in Kenwick. This site is positioned to indicate nutrients leaving the catchment and flowing into the Canning River, so they do not accurately represent nutrient concentrations in upstream areas. The Water Corporation operated a flow gauging station at this site until mid 2012 when data collection ceased.



Photo: Kelli O'Neill

Bickley Brook. Note the erosion along the bank at the right of the photograph.

Legend



Bickley Brook – facts and figures

| | |
|-------------------------------------|---|
| Length | ~ 6.4 km (Water Corp drain length); ~ 13.4 km (overall length of drains and brook) |
| Average rainfall | ~ 800 mm per year |
| Gauging station near monitored site | Site number 616047 |
| Catchment area | 21 km ² (total of Bickley Brook sub-catchment, the brook itself starts upstream of this) 19 km ² (monitored) |
| River flow | Ephemeral Bickley Brook Reservoir is located on Bickley Brook; one of its tributaries, Munday Brook, has the Victoria Reservoir on it. Both of these are upstream of the Bickley Brook sub-catchment |
| Average annual flow | Not able to calculate |
| Main land uses | Urban, commercial and industrial, semi-rural and remnant vegetation |

Nutrient Summary: concentrations, loads and HRAP targets

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|------------------|-------------------|-------------------|-------|-------|-------------------|-------|-------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Annual flow (GL) | 2.0 | 2.9 | 1.7 | 3.5 | 0.8 | 2.4 | 2.9 | 2.4 | 0.8 | 2.9 | | | |
| TN median (mg/L) | 0.70 [#] | 0.87 [#] | 1.20 | 1.20 | 0.71 [#] | 1.60 | 1.30 | 0.95 [#] | 0.90 [#] | 0.77 [#] | 0.71 [#] | 0.65 [#] | 0.74 [#] |
| TP median (mg/L) | 0.036 | 0.064 | 0.068 | 0.041 | 0.039 | 0.042 | 0.031 | 0.041 | 0.030 | 0.049 | 0.054 | 0.046 | 0.037 |
| TN load (t/yr) | 2.80 | 4.24 | 2.36 | 5.22 | 1.05 | 3.36 | 4.27 | 3.42 | 1.17 | 4.24 | | | |
| TP load (t/yr) | 0.04 | 0.09 | 0.04 | 0.11 | 0.01 | 0.06 | 0.09 | 0.07 | 0.02 | 0.09 | | | |

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).