

# Annual Waterways Report

## Derwent Estuary - Bruny Catchment

Water Assessment Branch

2009

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## Derwent Estuary – Bruny Catchment

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## 1. About the catchment

The Derwent Estuary – Bruny catchment area encompasses the numerous small creeks and streams draining the land from South Arm up to Old Beach on the eastern side of the Derwent Estuary, and from Granton to Gordon and Bruny Island on the western side of the estuary. Many of these are urban and suburban creeks that are ungauged and have either been converted to drains or have been heavily modified to function as drains (eg. Humphries, New Town and Hobart Rivulets). The only major river lying within the Derwent – Bruny catchment area is North West Bay River, which flows from the southern side of Mount Wellington into North West Bay at Margate. Water from the upper reaches of this river and other smaller rivulets and creeks on the mountain have been dammed or diverted for domestic water supply for Hobart and the surrounding suburbs and townships.

As would be expected, with Mount Wellington dominating the landscape in this catchment, the rainfall gradient is very steep. Rainfall on the top of the mountain is in the vicinity of 865 mm per year, while on the eastern side of the Derwent Estuary the land is amongst the driest in Tasmania with an annual rainfall of barely 500 mm. A distinct north-south rainfall gradient is found on Bruny Island, with annual rainfall of over 900 mm recorded at South Bruny Lighthouse (Bureau of Meteorology).

## 2. Streamflow and Water Allocation

### Streamflow

There are two streamflow monitoring stations maintained in the Derwent-Bruny catchment as part of the DPIW state-wide monitoring network. These are:

- North West Bay Rivulet, Margate water supply intake (5201); and
- Snug Rivulet (5202).

5201 was re-opened for flow monitoring in August 2008 for the first time since 1990.

Streamflows recorded in 2008 in the North West Bay Rivulet peaked in December. The minimum flow recorded at the site was 3.6 ML/day (Nov), and the maximum was 1,013 ML/day (Dec).

Streamflow in the Snug Rivulet peaked in August, with other high flows in July and November-December. Zero flows were recorded for 37 days in January and February. The maximum flow was 153 ML/day in August.

Monthly flows for 2008 were less than the historical average, with one exception of the December total at North West Bay Rivulet.



**Fig:** Snug Rivulet upstream Snug Tiers Road.

### Water Allocation

The Derwent-Bruny catchment had a total of 27,304 ML in licensed allocations for 2008. The following table shows the breakdown of the allocations.

	<b>Total Allocation (ML)</b>
Irrigation	1,191
Stock & Domestic	388
Water supply	25,030
Other	795

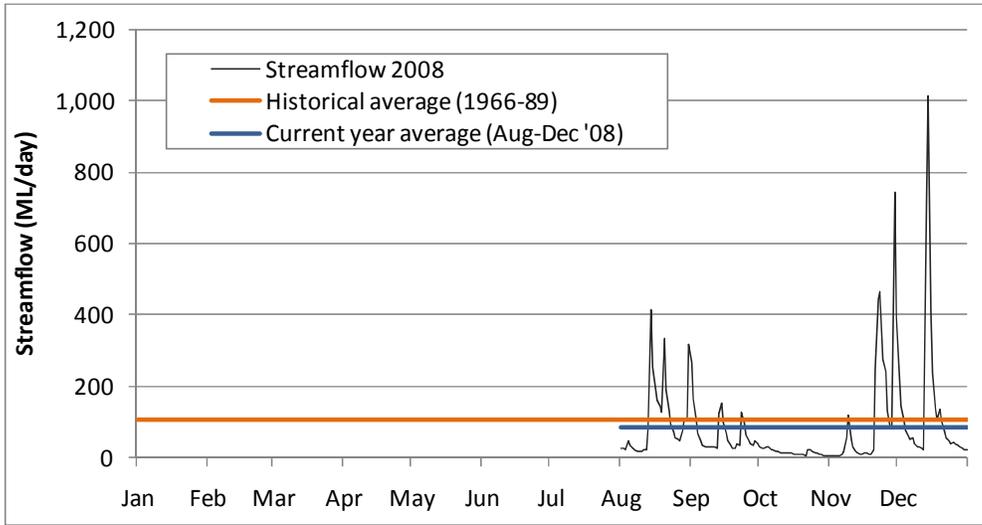
Of the total licensed water allocation within this catchment, 8,318 ML is held within constructed storages and 18,986 ML is taken directly from rivers and streams.

### Water Use Restrictions

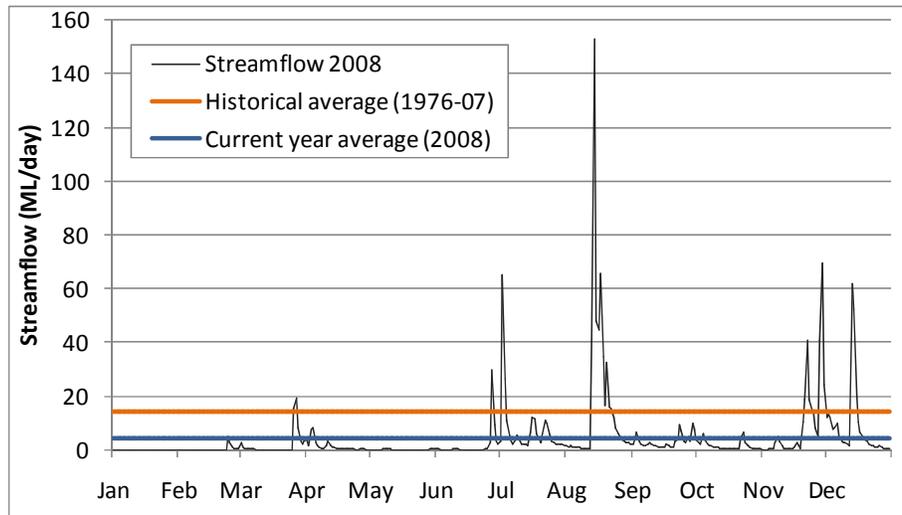
Water restriction triggers have been developed for the Derwent-Bruny catchment at North West Bay and Browns Rivers. These triggers are given in the table below, together with how long restrictions were applied during 2008.

<b>River</b>	<b>ML/d</b>	<b>%</b>	<b>Restriction</b>	<b>In effect 2008</b>
North West Bay River at Channel Hwy	2.6	100	Ban on direct takes	<b>29 days (Feb)</b>
Browns River upstream Channel Hwy	0.17	100	Ban on Direct takes	-

# 2008 Waterways Monitoring Report

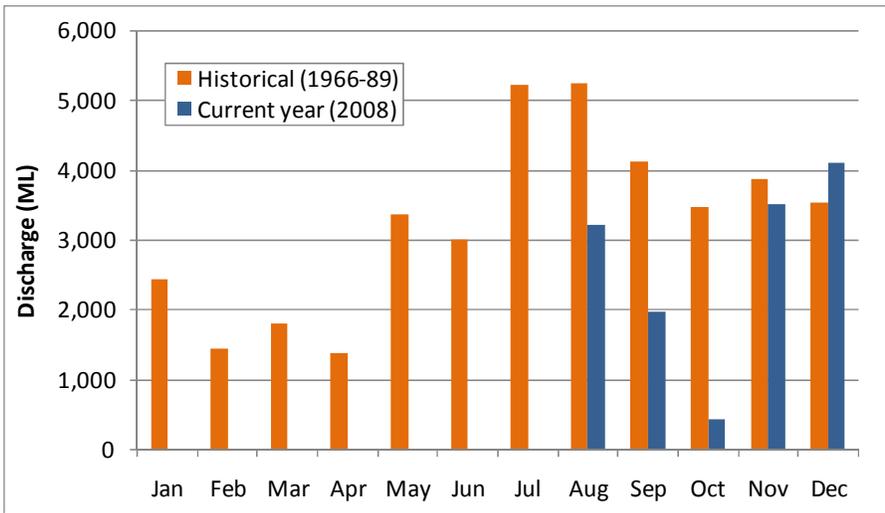


**Fig:** Time series of streamflow in the North West Bay Rivulet (station 5201) during 2008, plus a comparison of current year average with the historical.

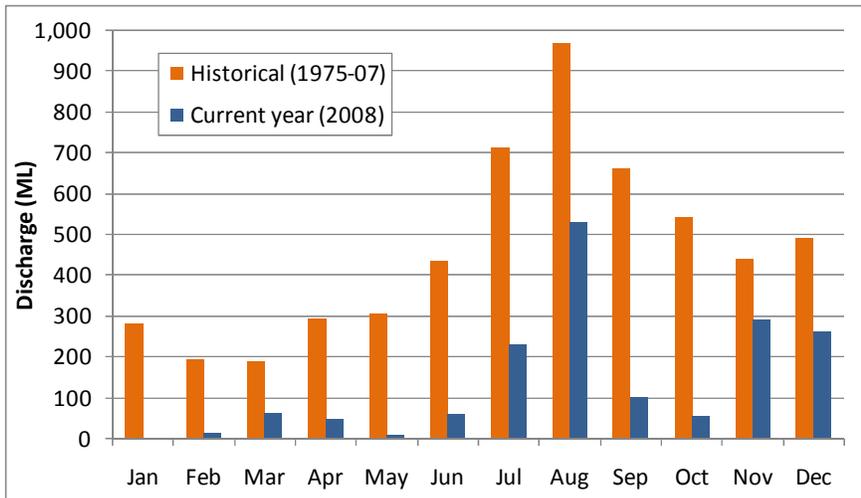


**Fig:** 2008 time series of streamflow in the Snug Rivulet (station 5202), plus a comparison of current year average with the historical.

# 2008 Waterways Monitoring Report



**Fig:** Comparison of total monthly discharge with historical average for the North West Bay Rivulet (station 5201).



**Fig:** Comparison of total monthly discharge with historical average for the Snug Rivulet (station 5202).

### 3. Water Quality

Water quality monitoring under the DPIW Statewide baseline monitoring network consists of monthly sampling at a single location within the catchment:

- Snug Rivulet upstream Snug Tiers Road (station 5202).

Sampling consists of spot measurements of selected water quality parameters on-site (water temperature, turbidity, conductivity, pH and dissolved oxygen). Bottled samples of water are also collected for analyses of nutrients (collected monthly) and pesticides (collected quarterly) at the Analytical Services Tasmania laboratory.

DPIW has developed site-specific trigger values for this site. The site-specific trigger values are based on monthly monitoring data collected between 2003 and 2006, and enable an assessment of *potential change* at a site since that time. The site-specific trigger values provide a target for the maintenance of existing ambient water quality, recognising that existing water quality at a site may already be influenced by varying degrees of impact. These trigger values indicate an expected range during daytime, base-flow conditions and should not be applied to high-flow periods.

A report containing further information about the interpretation of the DPIW site-specific trigger values is available through the DPIW website.

The table below provides summary statistics for monthly monitoring during 2008, as well as the relevant site-specific trigger values. Where the 2008 annual median exceeds a trigger value, this has been shaded to flag a potential change in water quality related to this parameter.

#### Links

1. Water Information System of Tasmania [www.water.dpiw.tas.gov.au/wist/](http://www.water.dpiw.tas.gov.au/wist/)
2. Pesticide monitoring in Tasmania [www.dpiw.tas.gov.au/pesticidemonitoring](http://www.dpiw.tas.gov.au/pesticidemonitoring)
3. DPIW surface water quality monitoring [www.dpiw.tas.gov.au/waterquality](http://www.dpiw.tas.gov.au/waterquality)
4. National water quality guidelines [www.environment.gov.au/water/quality/nwqms/](http://www.environment.gov.au/water/quality/nwqms/)

<b>Snug Rivulet upstream Snug Tiers Road</b>	<b>Minimum</b>	<b>Median</b>	<b>Maximum</b>	<b>No. samples</b>
<b>Temperature (° C)</b>	4.2	8.6	23.7	12
<b>Turbidity (NTU)</b>	1.6	3.1	9.0	12
<b>Electrical Conductivity (µS/cm)</b>	75	108	185	12
<b>Field pH</b>	5.90	6.55	7.71	10
<b>Dissolved Oxygen (mg/L)</b>	2.2	11.0	13.4	12
<b>Dissolved Oxygen (percent saturation)</b>	24.0	96.6	105.8	12
<b>Total Nitrogen (mg/L)</b>	0.210	0.345	1.000	12
<b>Total Phosphorus (mg/L)</b>	<0.005	0.010	0.071	12
<b>Dissolved Reactive Phosphorus-P (mg/L)</b>	<0.002	0.004	0.005	12
<b>Nitrate-N (mg/L)</b>	<0.002	0.002	0.063	12
<b>Nitrite-N (mg/L)</b>	<0.002	0.004	0.005	12
<b>Ammonia-N (mg/L)</b>	0.005	0.009	0.026	12

<b>Site-specific trigger value</b>	
<b>lower</b>	<b>upper</b>
6	16
	4
76	125
6.0	6.9
9.0	12.2
90	101
	0.440
	0.014
	0.004
	0.018
	0.005
	0.017