

Annual Waterways Report

Black - Detention Catchment

Water Assessment Branch

2009

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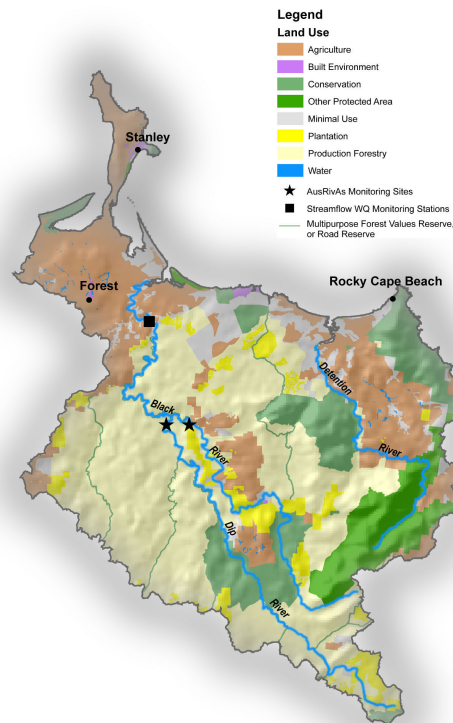
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Black - Detention Catchment

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1. About the catchment

The Black – Detention catchment is about 645 km² in area and is drained by three main rivers; the Black River (55 km), the Dip River (35 km), and the Detention River (23 km) which drains the eastern side of the catchment and flows into Bass Strait at Hellyer. The catchment also contains a number of small creeks and streams that discharge directly into the sea, most notably Wilsons Creek, Crayfish Creek and Grays Creek near Stanley.

The catchment is bounded on the eastern side by the Dip Range (elevation ~500m) but is otherwise a low-relief catchment with most of its area below 250m. Annual rainfall is about 935 mm at the coast and increases to about 1600 mm in the headwater area (as recorded at Preolenna).

There are a variety of land-uses in the catchment, with forest harvesting and plantation forestry occurring inland and agricultural activities (mostly grazing) largely centred on the coastal region.

2. Streamflow & Water Allocation

Streamflow

There is one streamflow monitoring station maintained in the Black-Detention catchment as part of the DPIW state-wide monitoring network. This station is:

- Black River at South Forest (14213).

Streamflow was lowest in the Black River during summer and autumn, and highest in winter and early spring. The minimum flow recorded during the year was 2 ML/day (Mar), and the maximum 2,224 ML/day (Sep).

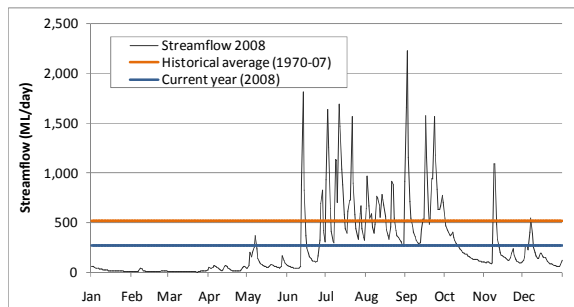


Fig: Time series of 2008 streamflow in the Black River at South Forest (station 14213), plus a comparison of current year average with the historical.

Monthly discharges were generally well below historical averages. September had the greatest discharge of 23,399 ML.

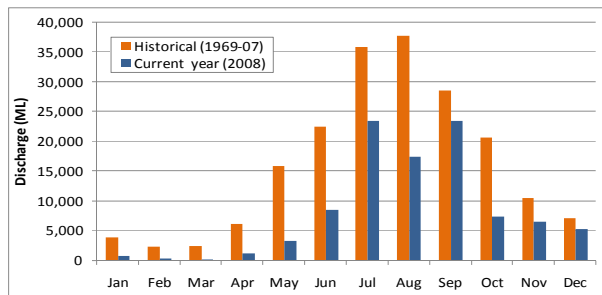


Fig: Comparison of total monthly discharge with historical average for the Black River at South Forest (station 14213).

Water Allocation

The Black catchment had a total of 9,257 ML in licensed allocations for 2008. The following table shows the breakdown of the allocations.

	Total Allocation (ML)
Irrigation	8,956
Stock & Domestic	224
Water supply	-
Other	77

Of the total licensed water allocation within this catchment, 7,969 ML is held within constructed storages and 1,288 ML is taken directly from rivers and streams.

Water Use Restrictions

Water restriction triggers have been developed for the Black and Detention Rivers, as indicated in the table below. There were no restrictions put in place during 2008.

River	ML/d	%	Restriction
Black River at Mawbanna Rd	2.6	100	Ban on direct takes
Detention River at Newhaven Rd	2	100	Ban on direct takes
Detention River at Coopers Rd	2	100	Ban on direct takes

3. Water Quality

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

- Black River at South Forest (station 14213).

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 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/
2. Pesticide monitoring in Tasmania
www.dpiw.tas.gov.au/pesticidemonitoring
3. DPIW surface water quality monitoring
www.dpiw.tas.gov.au/waterquality
4. National water quality guidelines
www.environment.gov.au/water/quality/nwqms/

Black River at South Forest	Minimum	Median	Maximum	No. samples	Site-specific trigger value	
					lower	upper
Temperature (° C)	5.7	12.7	17.1	12	8	18
Turbidity (NTU)	2.0	2.6	3.3	12		5
Electrical Conductivity (µS/cm)	127	136	144	12	111	123
Field pH	4.70	5.97	7.67	12	5.3	6.9
Dissolved Oxygen (mg/L)	7.8	10.8	13.4	11	8.2	11.0
Dissolved Oxygen (percent saturation)	82.5	96.4	112.9	11	83	94
Total Nitrogen (mg/L)	0.320	0.465	0.580	12		0.607
Total Phosphorus (mg/L)	0.008	0.013	0.024	12		0.023
Dissolved Reactive Phosphorus-P (mg/L)	<0.002	0.003	0.004	12		0.004
Nitrate-N (mg/L)	<0.002	0.003	0.116	12		0.077
Nitrite-N (mg/L)	0.002	0.003	0.005	12		0.006
Ammonia-N (mg/L)	0.008	0.013	0.018	12		0.022

4. River Health

The Australian River Assessment System (AUSRIVAS) is a standardised national system for assessment of river condition that uses benthic macroinvertebrates.

The AUSRIVAS models predict the aquatic macroinvertebrate fauna that would be expected to occur at a site in the absence of environmental stress such as pollution, habitat degradation or flow regulation. A comparison of the macroinvertebrates expected to occur at the test site with those actually collected (O/E ratio) provides a site specific measure of the biological impairment of the test site. Further details about AUSRIVAS can be found at:

www.ausrivas.canberra.edu.au/ausrivas

AUSRIVAS assessments are carried out at two locations in the Black River catchment;

- Dip River at Gibsons Creek Rd; and
- Black River at Spion Kop Road



Fig: Dip River at Gibsons Creek Rd.

Dip River at Gibsons Creek Road

This site is located 700 metres above the confluence of the Dip and Black rivers. This reference site is surrounded by dense native vegetation with little intrusion by exotic species. The river consists of a shallow run flowing over predominantly bedrock substrate. Submerged macrophytes have been estimated to cover 10 to 30% of the stream reach. Water quality variables were mostly within the ranges for this type of river.

This site has been continuously sampled since Spring 1994 and the combined season AUSRIVAS assessments have consistently classified this site as equivalent to reference (Band A) or above (Band X) for both riffle and edgewater habitats. No riffle habitat was available during Autumn 2008 and thus no combined season riffle outputs are available for Spr07/Au08 and Au08/Spr08. The threatened giant freshwater lobster *Astacopsis gouldii* has also been recorded at this site on a number of occasions.

Name	Season	O/E Taxa		Band
		Riffle	Edgewater	
Dip River at	Spr94/ Au95	1.16	1.01	A
Gibsons Ck Rd	Spr95/ Au96	1.06	0.94	A
	Au97/ Spr97	1.05	1.07	A
	Au98/ Spr98	1.06	0.95	A
	Au99/ Spr99	1.05	1.07	A
	Au00/ Spr00	1.02	1.19	X
	Au01/ Spr01	1.07	1.09	A
	Au02/ Spr02	1.1	1.03	A
	Au03/ Spr03	1.04	1.14	A
	Spr03/ Au04	1.09	1.15	X
	Spr04/ Au05	1.02	1.08	A
	Spr05/ Au06	1.06	1.07	A
	Spr06/ Au07	1.15	1	A
	Spr07/ Au08			NS
	Au08/ Spr08			NS

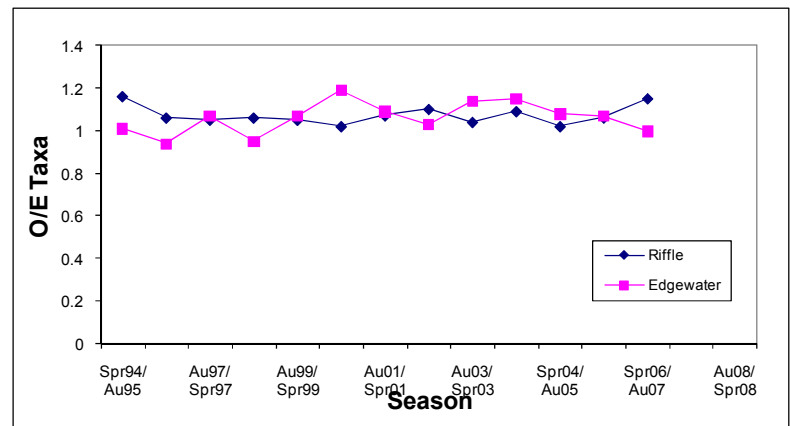


Fig: Combined season AUSRIVAS O/E Taxa scores for the Dip River at Gibsons Creek Road.

Black River at Spion Kop road

This site, located in the lower reaches of the Black River, is surrounded by thick native riparian vegetation and is in an undisturbed state with the exception of a small picnic area immediately adjacent to the site.

The river is approximately 23 metres wide and consists of a shallow riffle / run over pebble cobble substrate. A ford above the sampling site alters the hydraulics of the river but only under low flow conditions. A large number of trees and branches have been relocated to the edges of the river and these provide good edgewater habitat. Water quality at the site was consistently good.

Seventy four single and combined season AUSRIVAS assessments indicate that the site is in equivalent to reference (Band A) condition. The combined 1999 and combined 2008 riffle assessments however fall below the 'equivalent to reference' (Band A) condition. The Spring 2006 edgewater assessment to date is the only single season assessment below equivalent to reference (Band A) condition. The threatened giant freshwater lobster *Astacopsis gouldii* has been recorded at this site.

An electrofishing survey carried out in autumn 2001 found short finned eels (*Anguilla australis*), blackfish (*Gadopsis marmoratus*), brown trout (*Salmo trutta*), freshwater flathead (*Pseudaphritis urvillii*), jollytails (*Galaxias maculatus*) and the spotted galaxias (*Galaxias truttaceus*).



Fig: Black River at Spion Kop Road.

Name	Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Black River at Spion Kop Rd	Spr94/ Au95	1.04	A	1.02	A
	Spr95/ Au96	1.09	A	1.15	X
	Au97/ Spr97	0.97	A	1.09	A
	Au98/ Spr98		NS		NS
	Au99/ Spr99	0.79	B	1.06	A
	Au00/ Spr00	1.03	A	1.2	X
	Au01/ Spr01	1	A	1.01	A
	Au02/ Spr02	1.06	A	1.01	A
	Au03/ Spr03	0.92	A	1.14	A
	Spr03/ Au04	0.94	A	1.15	X
	Spr04/ Au05	0.93	A	0.93	A
	Spr05/ Au06	1.03	A	1.12	A
	Spr06/ Au07	1.04	A	0.87	A
	Spr07/ Au08	0.93	A		NS
	Au08/ Spr08	0.84	B		NS

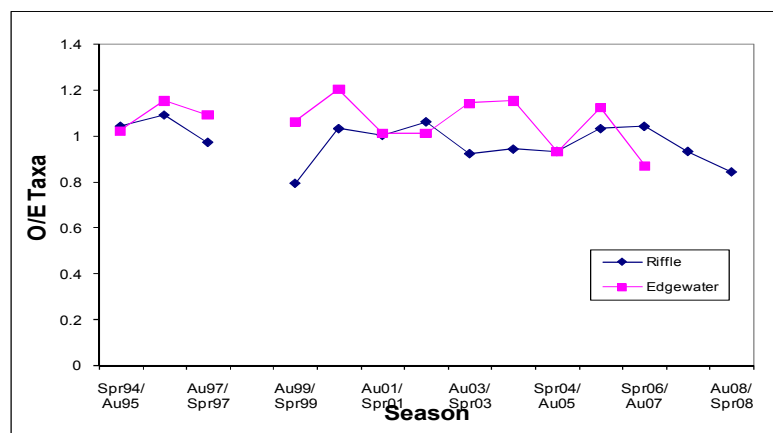


Fig: Combined season AUSRIVAS O/E Taxa scores for the Black River at Spion Kop Road.