Clyde Catchment

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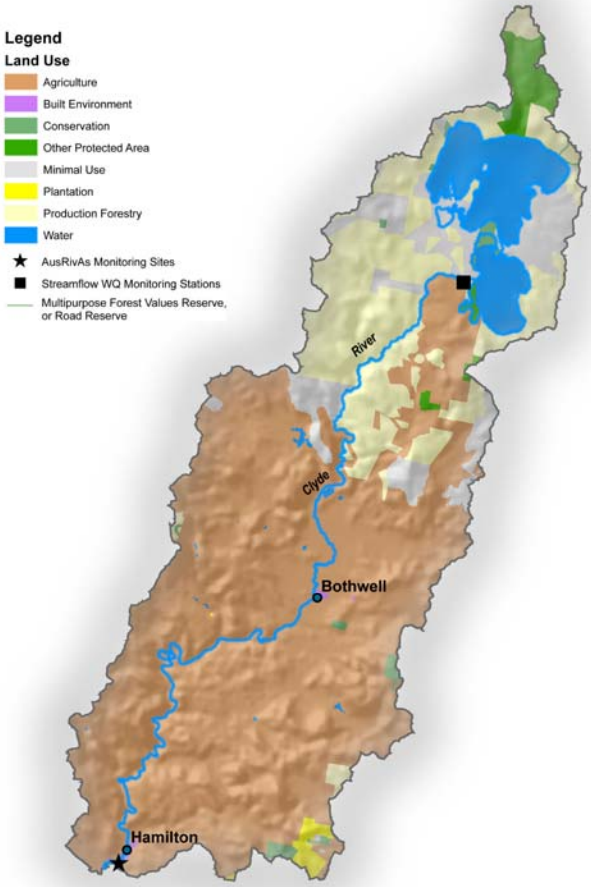

Tasmania
DEPARTMENT *of*
PRIMARY INDUSTRIES,
WATER *and* ENVIRONMENT

1. About the catchment

The Clyde River catchment (catchment area 1,120 km^2) lies within the driest region in Tasmania, with much of the catchment receiving annual rainfall of less than 550 mm. The catchment contains two significant storages, Lake Sorell and Lake Crescent. Water level in both lakes is regulated and flow in the Clyde River is managed at the Lake Crescent outlet to supply water for irrigation and domestic purposes for the towns of Bothwell and Hamilton before joining the Derwent River system at Lake Meadowbank. Water in both the lakes and the Clyde River is managed by the River Clyde Trust, which was formed following an Act of Parliament initially passed in 1857.

Land use in the catchment is predominantly agriculture (cattle and sheep grazing, dairy farming and cropping) and timber is harvested primarily from private land. Both Lakes Sorell and Crescent were very popular trout fisheries in the past, however the introduction of European Carp has resulted in restricted access to both of these lakes and radical changes to water level management.

2. Streamflow and Water Allocation

The only streamflow information collected within the catchment under the DPIWE Statewide monitoring network is from the Clyde River downstream Lake Crescent (station 4202).

Period of record

1979 to the present.

Total Water Allocation

The following table shows the breakdown of water allocations in the catchment.

	Total Allocation
Irrigation	18,549 ML
Stock & Domestic	14 ML
Water Supply	0 ML
Other	5,000 ML

Of the total licensed water allocation within this catchment, 8,646 ML is stored within constructed storages and 14,917 ML is extracted directly from rivers and streams.

10,000 ML of the total allocation within the catchment is managed by the River Clyde Trust. The remainder is managed by DPIWE.

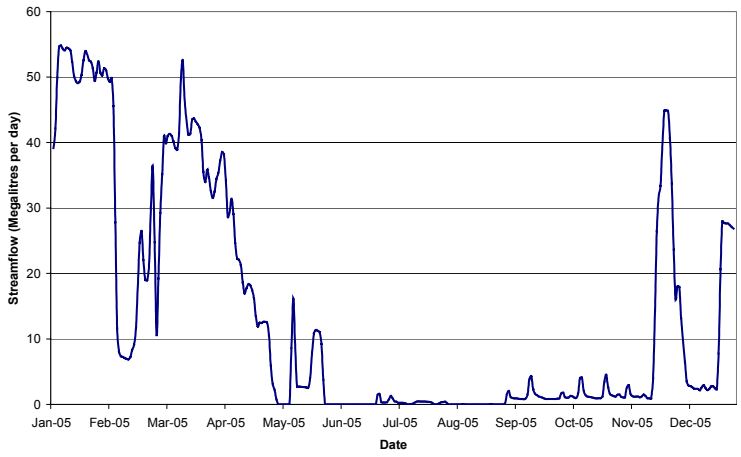

Fig: Time series of streamflow in the Clyde River downstream Lake Crescent (station 4202) during 2005.

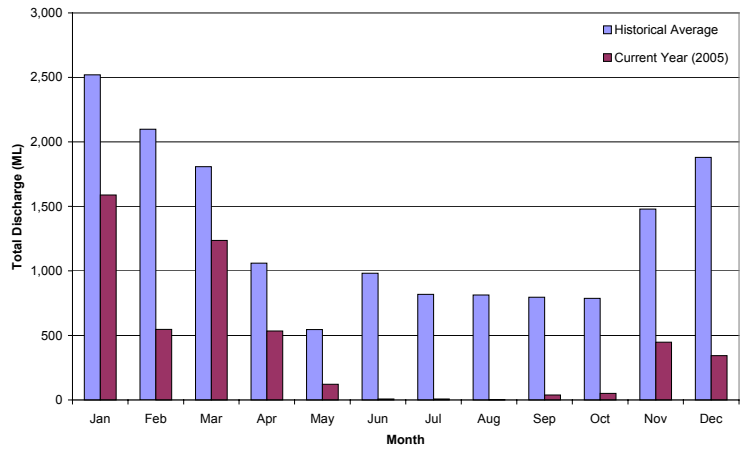

Fig: Comparison of the total monthly discharge with historical average monthly discharge for the Clyde River downstream Lake Crescent (station 4202).

Water use restrictions

Water use restrictions have been developed in this catchment based on flow measured at Clyde River at Bothwell (operated by Hydro Tasmania).

3. Water Quality

Water quality monitoring under the DPIWE Statewide baseline monitoring network consists of periodic sampling at four to six-weekly intervals at a single location within the catchment:

- Clyde River downstream Lake Crescent (station 4202).

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 and pesticides (collected quarterly) at the Analytical Services Tasmania laboratory.

Fig: Clyde River downstream Lake Crescent.

Links

1. Water Information System of Tasmania

http://water.dpiwe.tas.gov.au/wist/ui

2. Pesticide Monitoring in Tasmania

www.dpiwe.tas.gov.au/Environmental Quality/Air Noise & Water/Water

3. Surface water quality DPIWE website

www.dpiwe.tas.gov.au/waterquality

4. ANZECC 2000 guidelines

www.deh.gov.au/water/quality/nwqms/volume1.html

Clyde River downstream Lake Crescent	**Minimum**	**Median**	**Maximum**	**Number of samples**
Temperature (deg C)	5.2	10.75	19.7	8
Turbidity (NTU)	35.2	103	239	8
Electrical Conductivity (μS/cm)	88.0	125	150	8
Field pH	6.29	6.71	7.29	8
Dissolved Oxygen (mg/L)	7.74	10.21	11.69	8
Dissolved Oxygen (percent saturation)	88.6	105.6	112.6	7
Total Nitrogen (mg/L)	0.884	2.67	4.82	8
Total Phosphorus (mg/L)	0.033	0.106	0.27	8
Dissolved Reactive Phosphorus (mg/L)	0.004	0.004	0.009	7
Nitrate-N (mg/L)	0.028	0.228	0.839	8
Nitrite-N (mg/L)	<0.002	0.003	0.011	8
Ammonia-N (mg/L)	0.026	0.063	0.501	8

All statistics derived from periodic spot samples.

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 only one location in the Clyde River catchment.

Fig: Clyde River below Hamilton.

Clyde River below Hamilton

This site is located downstream of the town of Hamilton and approximately 4 kilometres above the confluence of the Clyde and Derwent rivers. The surrounding land is used primarily for agricultural activities. Most of the riparian vegetation on both sides of the river has been cleared for grazing and the small amount remaining is dominated by non-native species such as willows, blackberries and hawthorn.

Within the stream habitat consists of deep pools and slow flowing runs over pebble / gravel substrate. Stock access and effluent discharge from Hamilton's sewerage treatment plant appear to have impacted on water quality and the condition of the instream habitat. A fine layer of silt and filamentous algae covers more than 70% of the substrate.

Combined season AUSRIVAS assessments for the riffle habitat have shown a decreasing trend in the health of this site with O/E scores decreasing from 0.77 in 1998 to 0.6 in spring 2004/autumn 2005. The magnitude of this decrease has been sufficient to shift this site from significantly impaired (Band B) to severely impaired (Band C).

Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Au98/ Spr98	0.77	B	0.85	A
Au99/ Spr99	0.6	C	0.94	A
Spr03/ Au04	0.55	C	0.9	A
Spr04/ Au05	0.6	C	1.07	A

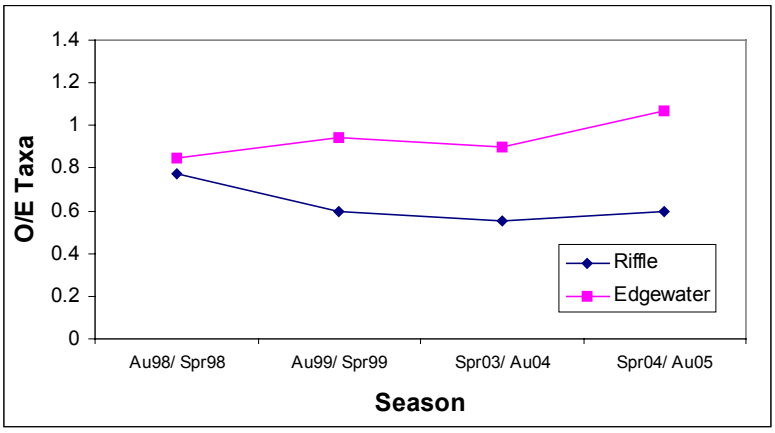

Fig: Combined season AUSRIVAS O/E Taxa scores for the Clyde River below Hamilton