Annual Waterways Report

Jordan Catchment

Water Assessment Branch

2009

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Department of Primary Industries and Water

Tasmania
Explore the possibilities

Jordan Catchment

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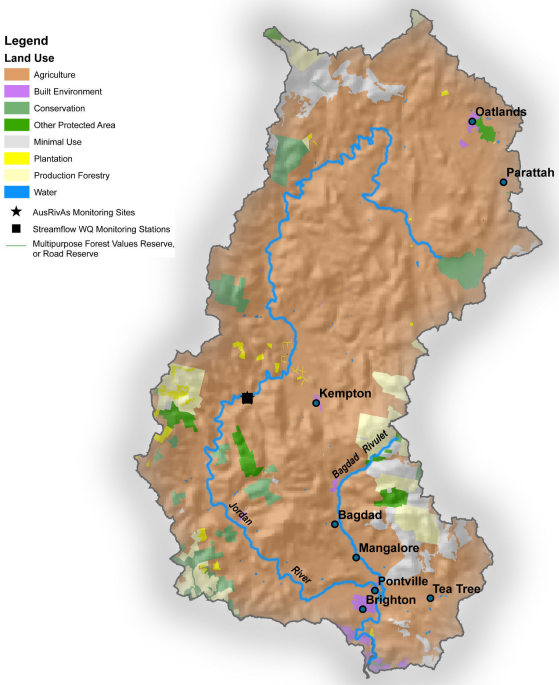

1. About the catchment

The Jordan catchment lies within the driest region of Tasmania, where regional annual rainfall is often less than 500 mm. The area is prone to drought and as a result streamflow in the Jordan River (which is over 120 km long) and all of the smaller rivulets is very unreliable, with extended periods of zero surface-water flow. There are only two sizeable storages in the catchment, Lake Dulverton near Oatlands and the larger Lake Tiberias between Jericho and Stonor. While both were originally entirely natural lakes, water level in Lake Dulverton is artificially maintained by groundwater pumping and both lakes are utilised as a local source for irrigation water. Due to lack of availability of surface water, groundwater resources are extensively utilised, particularly in the upper half of the catchment.

A large percentage of the catchment has been cleared for sheep and cattle grazing, although there are some areas where intensive cropping and dairy farming occurs. Surface water throughout parts of the lower catchment is also affected to varying degrees by salinity.

2. Streamflow and Water Allocation

Streamflow

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

- Jordan River at Mauriceton (4201).

The Jordan River experienced very low to zero flow during 2008, with an average of 0.08 ML/day. Zero flows were recorded for 132 days of the year (Jan-May, and Dec).

Monthly discharge amounts in 2008 were well below historical averages. The greatest discharge was 7 ML in July, compared to an historical average of 2,550 ML.

Water Allocation

The Jordan River catchment had a total of 10,512 ML in licensed allocations for 2008. The following table shows the breakdown of the allocations.

	Total Allocation (ML)
Irrigation	9,475
Stock & Domestic	470
Water supply	-
Other	567

Of the total licensed water allocation within this catchment, 9,976 ML is held within constructed storages and 536 ML is taken directly from rivers and streams.

Water Use Restrictions

Water restriction triggers for irrigation have been developed for the Jordan River catchment at two locations, as given in the table below. Restrictions were in place year-round on the Jordan, due to lack of flow.

River	ML/d	%	Restriction	In effect 2008
Jordan River at Pontville	0.86	100	Ban on direct takes	year long
Jordan River at "Maurice-ton"	0.86	100	Ban on direct takes	year long

Fig: Jordan River at Mauriceton.

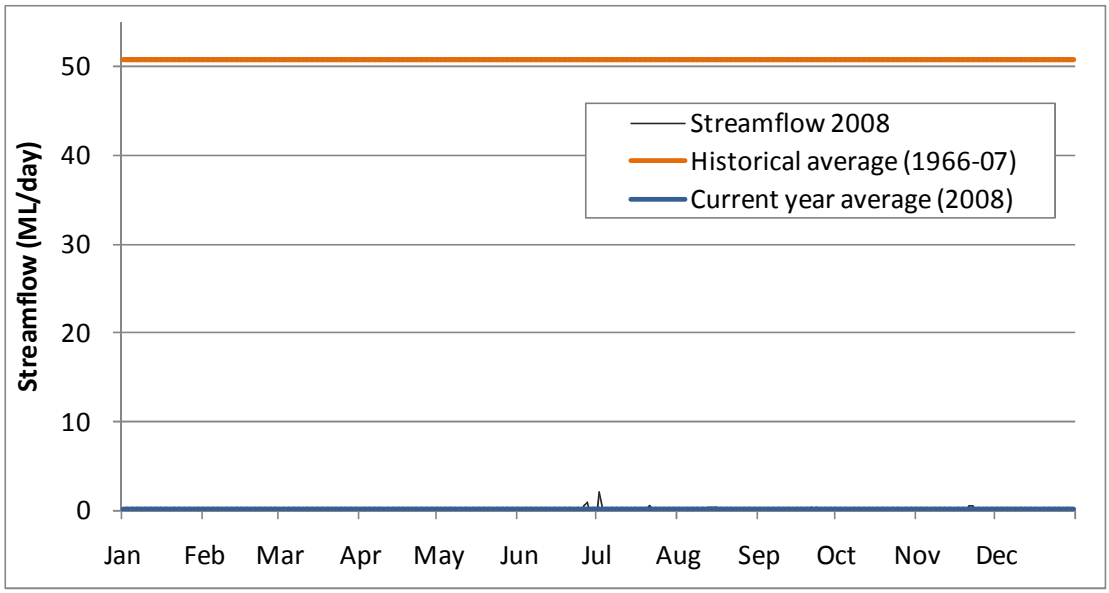

Fig: Time series of 2008 streamflow in the Jordan River at Mauriceton (station 4201), plus a comparison of current year average with the historical.

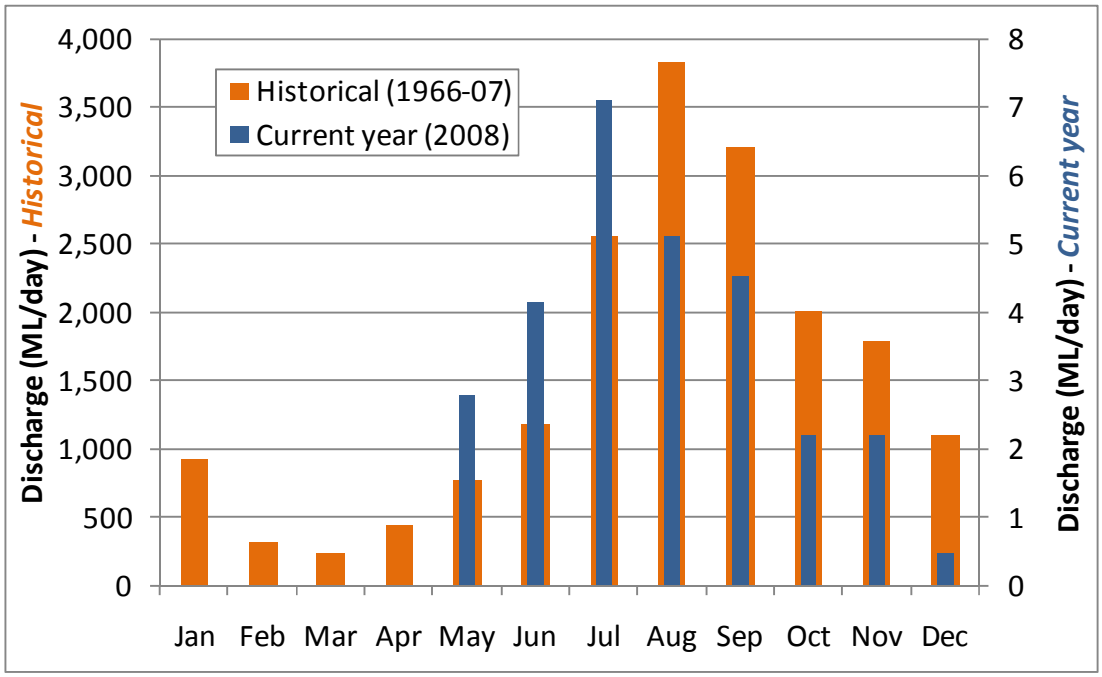

Fig: Comparison of total monthly discharge with historical average for the Jordan River at Mauriceton (station 4201).

3. Water Quality

Under the DPIW Statewide baseline monitoring network, instream sensors were maintained throughout 2008 at one location within the catchment:

- Jordan River at Mauriceton (station 4201).

Water temperature, electrical conductivity and turbidity are continuously monitored at this station. Missing data is due to inconsistencies in data, low water level causing the instrument to be out of water or instrument malfunction.

The results of continuous turbidity monitoring at the Jordan River (4201) are not presented due to low river levels causing instruments to be out of water, inconsistencies in data quality and/or instrument malfunction. Missing data in the graphs below is due to a combination of the same reasons.

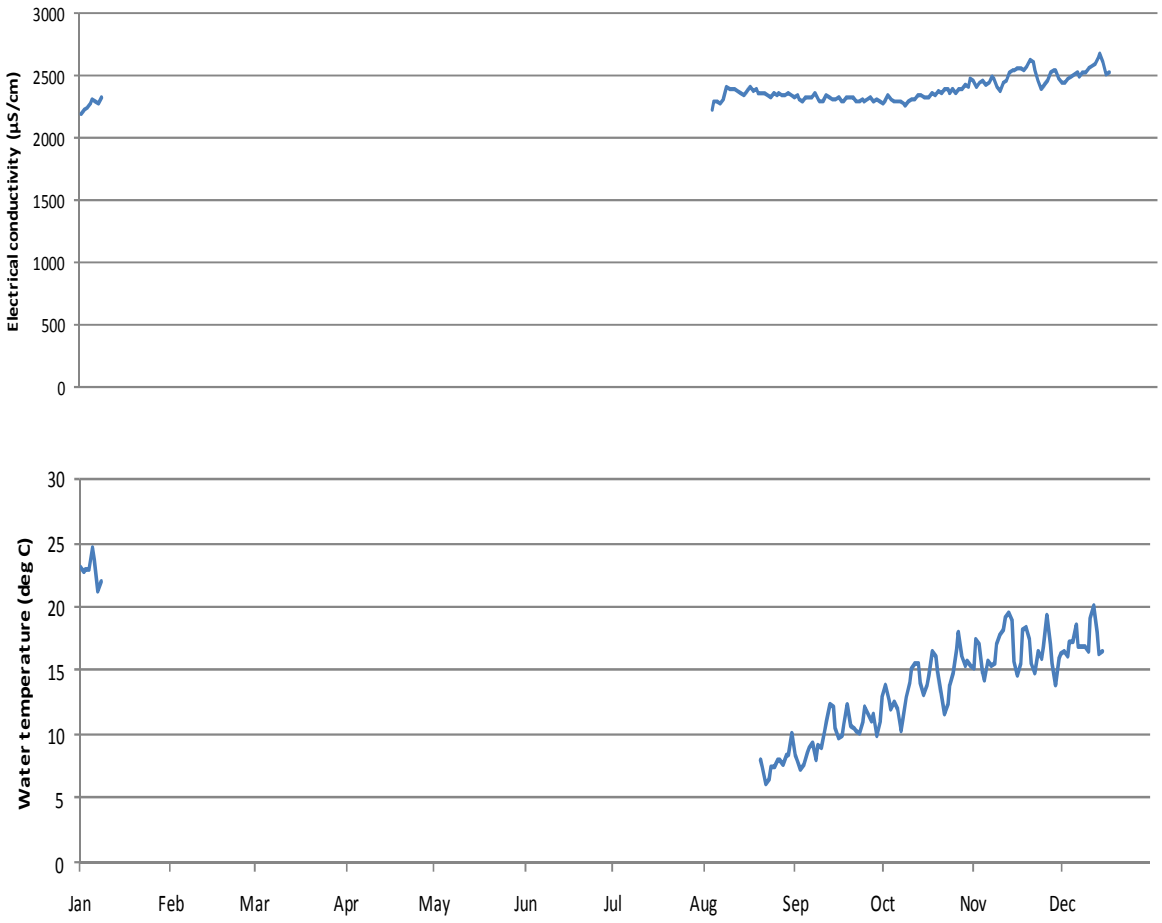

Fig: Continuous instream water quality for Jordan River at Mauriceton (station 4201) during 2008.

Monthly water sampling is also conducted at:

- Jordan River at Mauriceton (station 4201).

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/**
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/**

Jordan River at Mauriceton	**Minimum**	**Median**	**Maximum**	**No. samples**	**Site-specific trigger value**	
					lower	**upper**
Temperature (° C)	6.3	15.2	24.7	11	8	18
Turbidity (NTU)	3.4	10.2	59.9	11		7
Electrical Conductivity (µS/cm)	2130	2445	5390	11	868	1682
Field pH	7.92	8.23	8.38	11	7.8	8.1
Dissolved Oxygen (mg/L)	5.8	9.1	15.4	11	8.0	10.9
Dissolved Oxygen (percent saturation)	58.4	94.0	149.2	11	80	101
Total Nitrogen (mg/L)	0.800	1.200	4.000	11		0.920
Total Phosphorus (mg/L)	0.025	0.050	0.235	11		0.032
Dissolved Reactive Phosphorus-P (mg/L)	<0.002	0.003	0.012	11		0.006
Nitrate-N (mg/L)	<0.002	<0.002	0.299	11		0.023
Nitrite-N (mg/L)	<0.002	<0.002	0.018	11		<0.002
Ammonia-N (mg/L)	<0.002	0.004	0.018	11		0.014

Note that some samples were taken during periods of very low or no flow. A sample was not taken at the site visit in April 2008 due to a lack of water at the monitoring location.

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

Only one site in the Jordan catchment is assessed using AUSRIVAS.

Fig: Jordan River at Mauriceton.

Jordan River at Mauriceton

This site is in the middle reaches of the Jordan River at the Mauriceton stream gauging station (station 4201). The Jordan River at this point is 5 to 8 metres wide and consists of shallow runs and deep pools over a pebble/silt substrate. The riparian vegetation is severely modified on both banks through the removal of native vegetation for grazing pasture and the intrusion of exotic species, such as willow and gorse.

Combined season assessments of the riffle habitat have not been possible as this habitat is temporary and has not been present since Spring 2005. When present, single season assessments of the riffle habitat have classified this site as significantly impaired (Band B) or severely impaired (Band C) with an average O/E score of 0.54.

Combined season AUSRIVAS assessments for the edgewater habitat have consistently classified this site as equivalent to reference (Band A) with O/E scores ranging from 0.96 to 1.13. Combined season assessments since Spring 2006/Autumn 2007 have not been possible due to elevated conductivity levels.

Name	Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Jordan River at	Au99/ Spr99		NS	1.13	A
Mauriceton	Spr03/ Au04		NS	0.96	A
	Spr04/ Au05		NS	1.07	A
	Spr05/ Au06		NS	1.07	A
	Spr06/ Au07		NS		OE
	Spr07/ Au08		NS		OE
	Au08/ Spr08		NS		OE

OE=outside the experience of the model

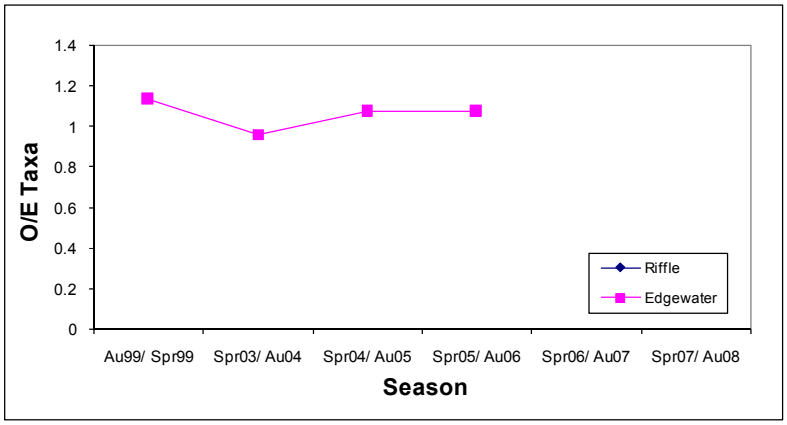

Fig: Combined season AUSRIVAS O/E Taxa scores for the Jordan River at 'Mauriceton'.