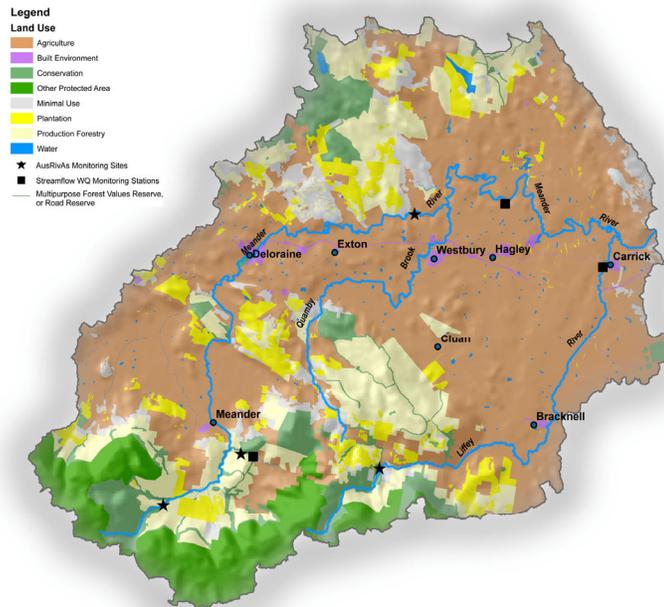


## Meander Catchment

### Contents

1. About the catchment
2. Streamflow and Water Allocation
3. Water Quality
4. River Health



## 1. About the catchment

The Meander catchment (area ~1,600 km<sup>2</sup>) is a land-locked sub-catchment of the South Esk Basin which drains a large part of the central east of Tasmania and discharges into the Tamar Estuary at Launceston. The Meander River is the largest river in this catchment, originating in the foothills of the Great Western Tiers (altitude 1,200 m) and flowing over 100 km to join the South Esk River at Hadspen to the east. Significant tributaries to the Meander River are Western Creek, Quamby Brook and the Liffey River, all three which collect runoff from the northern perimeter of the Tiers and Quamby Bluff, where average annual rainfall exceeds 1,600 mm and intense thunderstorms are generated. At the catchment outlet at Hadspen, local rainfall is about 700 mm per annum.

Although there is some forestry occurring in the headwaters of the catchment, a large majority of the catchment is used for agricultural production ranging from cattle and sheep grazing to irrigated cropping and dairy farming. In the Liffey sub-catchment, additional water has been diverted from the Poatina Power Station tailrace at Brumbys Creek into the Liffey River near Bracknell to support agricultural activities.

## 2. Streamflow & Water Allocation

Three streamflow monitoring stations are maintained in this catchment as part of the DPIWE State-wide monitoring network. These are;

- Jackeys Creek downstream Jackeys Marsh (station 18221);
- Meander River at Strath Bridge (station 852); and
- Liffey River at Carrick (station 164).

### Total Water Allocation

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

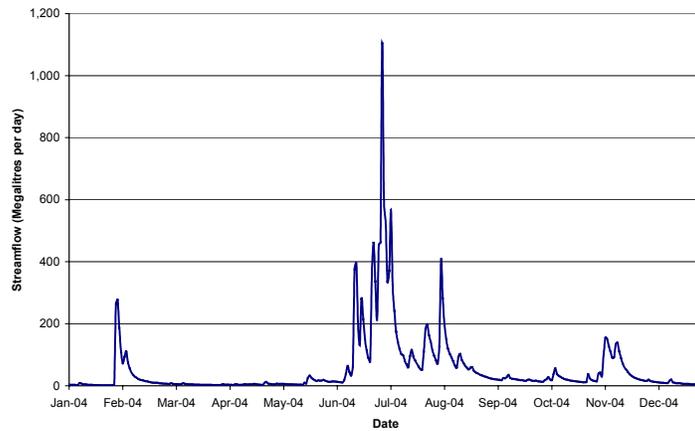
	Total Allocation
Irrigation	13,207 ML
Stock & Domestic	1,156 ML
Water Supply	611 ML
Other	4,547 ML

Of the total licensed water allocation within this catchment, 15,749 ML is stored within constructed storages and 3,772 ML is extracted directly from rivers and streams.

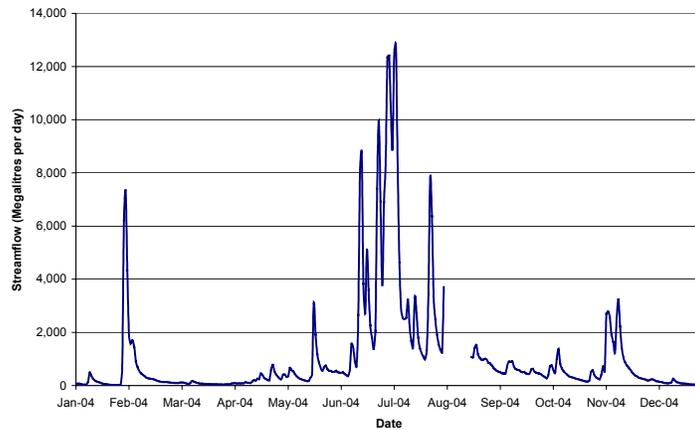
### Water Use Restrictions

Water restriction triggers have been developed for the Meander River and Western Creek. When streamflow falls to the levels indicated, water restrictions are normally considered.

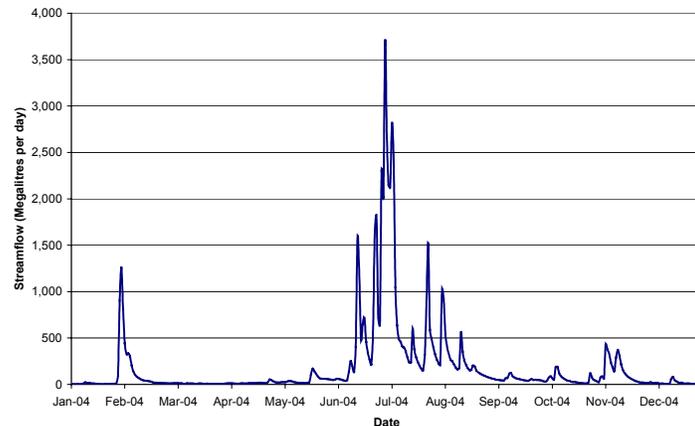
Meander at Strath Bridge	25 ML/day
Western Creek	1.5 ML/day



**Fig:** Time series of streamflow in Jackeys Creek (station 18221) during 2004.

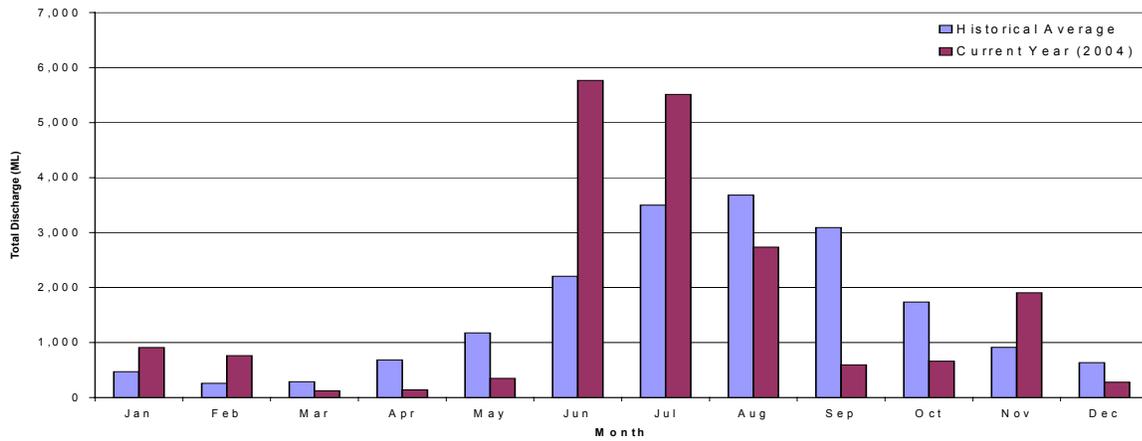


**Fig:** Time series of streamflow in the Meander River at Strath Bridge (station 852) during 2004.

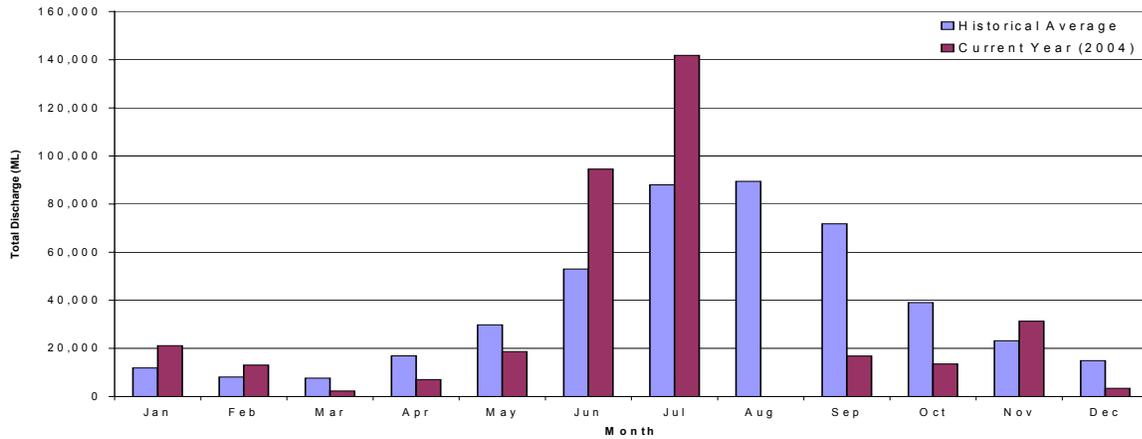


**Fig:** Time series of streamflow in the Liffey River at Carrick (station 164) during 2004.

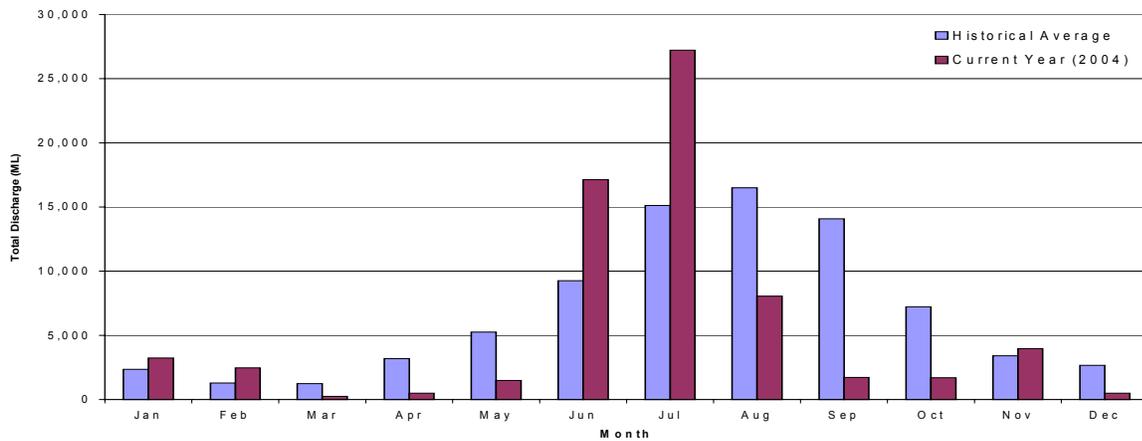
# 2004 Waterways Monitoring Report



**Fig:** Comparison of the total monthly discharge with historical average monthly discharge for Jackeys Creek (station 18221).



**Fig:** Comparison of the total monthly discharge with historical average monthly discharge for the the Meander River at Strath Bridge (station 852).



**Fig:** Comparison of the total monthly discharge with historical average monthly discharge for the Liffey River at Carrick (station 164).

## 3. Water Quality

Under the DPIWE Statewide water quality monitoring strategy, instream sensors were maintained throughout 2004 at the following locations within the catchment:

- Jackeys Creek downstream Jackeys Marsh (station 18221);
- Meander River at Strath Bridge (station 852); and
- Liffey River at Carrick (station 164).

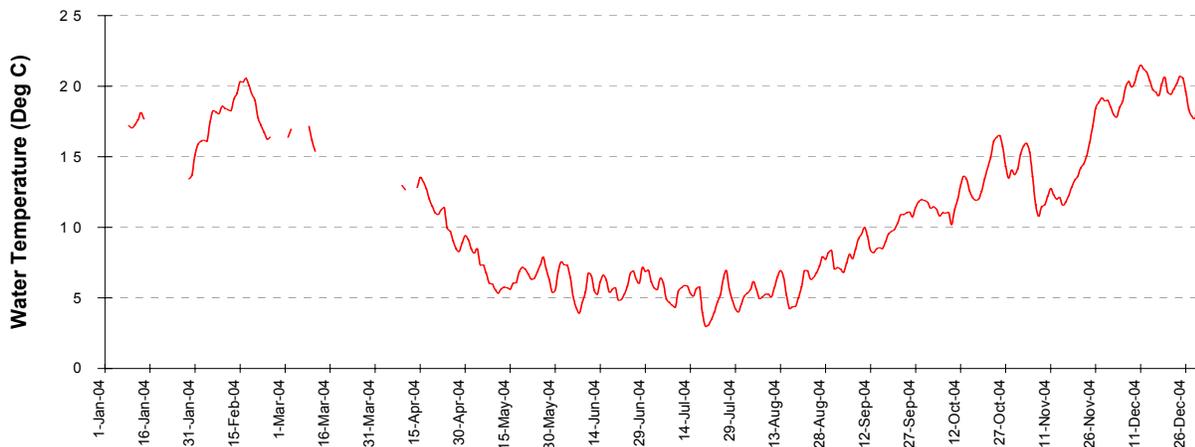
Water temperature, electrical conductivity and turbidity are monitored continuously at all three stations, although instream water quality probes were only installed at Liffey River in December 2004. Results for continuous electrical conductivity monitoring at Jackeys Creek and continuous turbidity and electrical conductivity monitoring at Meander River have not been included in this report due to inconsistencies in the data or instream probe malfunction. Results of continuous monitoring at Liffey River at Carrick will be included in the 2005 Waterways Monitoring Report.



**Fig:** Jackeys Creek downstream Jackeys Marsh.

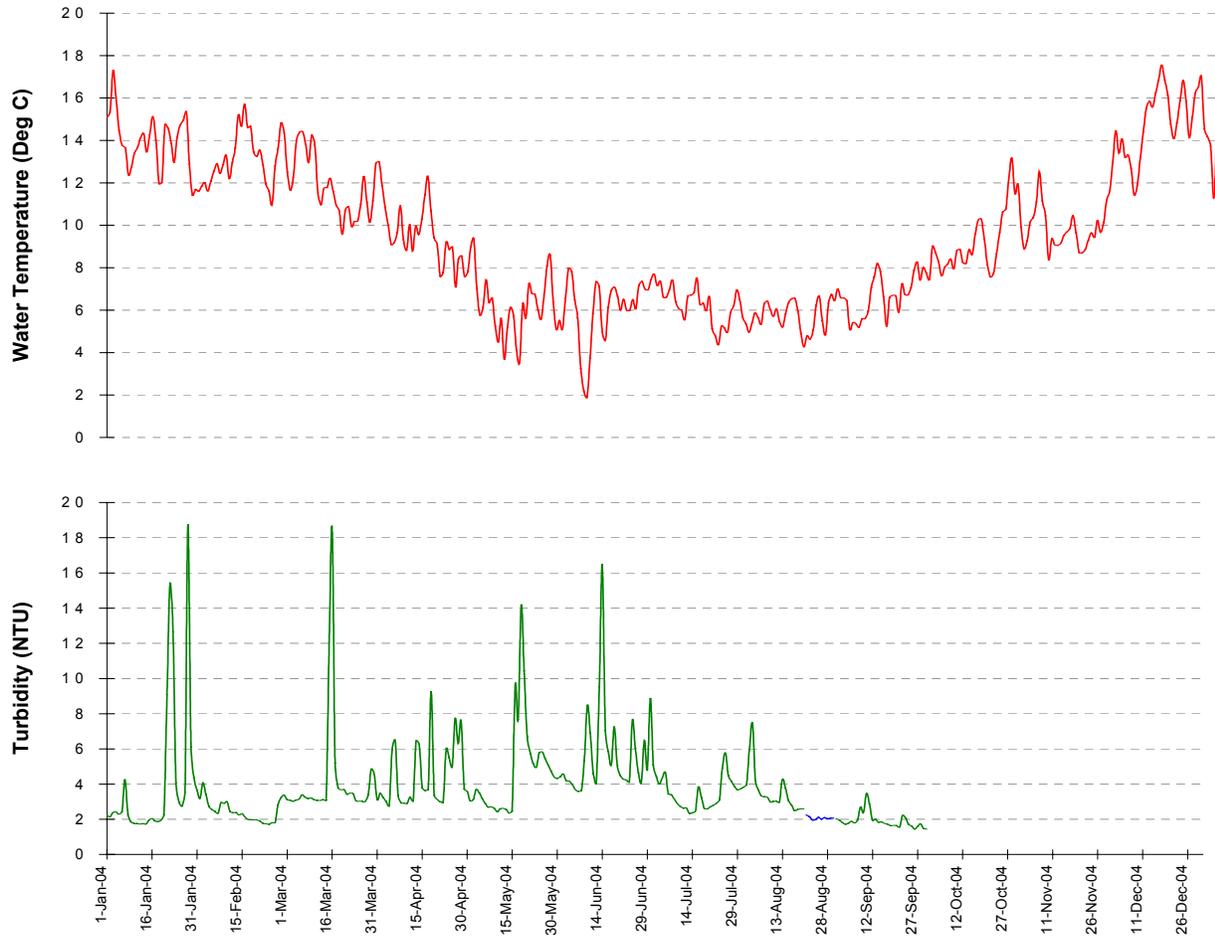


**Fig:** Meander River at Strath Bridge.



**Fig:** Continuous instream water quality for Meander River at Strath Bridge (station 852) during 2004; Data quality coded as: Excellent; Good; Fair; or Fair Estimated Data.

# 2004 Waterways Monitoring Report



**Fig:** Continuous instream water quality for Jackeys Creek downstream Jackeys Marsh (station 18221) during 2004; Data quality coded as: Excellent; **Good**; **Fair**; or **Fair Estimated Data**.

# 2004 Waterways Monitoring Report

Periodic water sampling is also conducted at four to six-weekly intervals at the following locations within the catchment:

- Jackeys Creek downstream Jackeys Marsh (station 18221);
- Meander River at Strath Bridge (station 852); and
- Liffey River at Carrick (station 164).

Sampling consists of spot measurements of selected water quality parameters on-site (water temperature, turbidity, conductivity, pH and dissolved oxygen), as well as the collection of bottled samples for nutrient analysis later in the Analytical Services Tasmania laboratory.



**Fig:** Liffey River at Carrick.

## Links

1. Surface water quality DPIWE website  
[www.dpiwe.tas.gov.au/waterquality](http://www.dpiwe.tas.gov.au/waterquality)

2. ANZECC 2000 guidelines  
[www.deh.gov.au/water/quality/nwqms/volume1.html](http://www.deh.gov.au/water/quality/nwqms/volume1.html)

<b>Jackeys Creek downstream Jackeys Marsh</b>	<b>Minimum</b>	<b>Median</b>	<b>Maximum</b>	<b>Number of samples</b>
<b>Temperature (deg C)</b>	4.5	7.9	13.2	12
<b>Turbidity (NTU)</b>	1.47	2.4	13.8	12
<b>Electrical Conductivity (<math>\mu</math>S/cm)</b>	32	50.4	61.2	12
<b>Field pH</b>	5.43	6.84	7.54	12
<b>Dissolved Oxygen (mg/L)</b>	7.8	11.13	11.72	11
<b>Dissolved Oxygen (percent saturation)</b>	71.82	94.2	113.2	11
<b>Total Nitrogen (mg/L)</b>	0.2	0.304	0.831	12
<b>Total Phosphorus (mg/L)</b>	0.005	0.011	0.023	12
<b>Dissolved Reactive Phosphorus (mg/L)</b>	0.002	0.004	0.006	12
<b>Nitrate-N (mg/L)</b>	0.033	0.114	0.447	12
<b>Nitrite-N (mg/L)</b>	< 0.002	< 0.002	0.002	12
<b>Ammonia-N (mg/L)</b>	< 0.002	0.010	0.016	12

*All statistics derived from periodic spot samples.*

# 2004 Waterways Monitoring Report

<b>Meander River at Strath Bridge</b>	<b>Minimum</b>	<b>Median</b>	<b>Maximum</b>	<b>Number of samples</b>
<b>Temperature (deg C)</b>	6.7	12.5	20.3	13
<b>Turbidity (NTU)</b>	1.36	3.48	38.4	13
<b>Electrical Conductivity (<math>\mu\text{S}/\text{cm}</math>)</b>	22	81	135	13
<b>Field pH</b>	6.36	6.99	7.55	11
<b>Dissolved Oxygen (mg/L)</b>	6.1	9.9	11.43	11
<b>Dissolved Oxygen (percent saturation)</b>	68.6	90.9	106.4	11
<b>Total Nitrogen (mg/L)</b>	0.198	0.279	1.13	13
<b>Total Phosphorus (mg/L)</b>	0.007	0.018	0.089	13
<b>Dissolved Reactive Phosphorus (mg/L)</b>	0.002	0.003	0.03	13
<b>Nitrate-N (mg/L)</b>	0.004	0.022	0.502	13
<b>Nitrite-N (mg/L)</b>	< 0.002	< 0.002	0.005	13
<b>Ammonia-N (mg/L)</b>	< 0.002	0.012	0.04	13

*All statistics derived from periodic spot samples.*

<b>Liffey River at Carrick</b>	<b>Minimum</b>	<b>Median</b>	<b>Maximum</b>	<b>Number of samples</b>
<b>Temperature (deg C)</b>	6.1	10.95	19.6	12
<b>Turbidity (NTU)</b>	3.85	7.4	30.3	13
<b>Electrical Conductivity (<math>\mu\text{S}/\text{cm}</math>)</b>	37	65	105	13
<b>Field pH</b>	6.62	6.98	7.44	11
<b>Dissolved Oxygen (mg/L)</b>	6.7	8.85	12.4	10
<b>Dissolved Oxygen (percent saturation)</b>	73.3	89.0	101.6	10
<b>Total Nitrogen (mg/L)</b>	0.183	0.241	0.561	13
<b>Total Phosphorus (mg/L)</b>	0.005	0.015	0.033	13
<b>Dissolved Reactive Phosphorus (mg/L)</b>	0.002	0.003	0.006	13
<b>Nitrate-N (mg/L)</b>	< 0.002	0.02	0.313	13
<b>Nitrite-N (mg/L)</b>	< 0.002	< 0.002	0.003	13
<b>Ammonia-N (mg/L)</b>	0.009	0.019	0.039	13

*All statistics derived from periodic spot samples.*

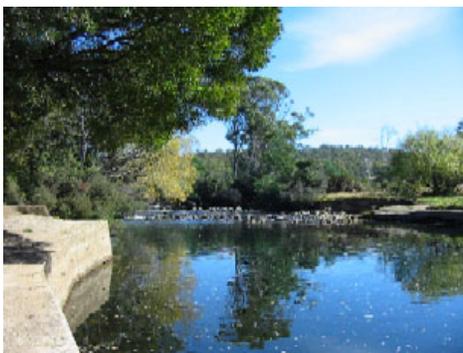
## 4. River Health

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](http://www.ausrivas.canberra.edu.au/ausrivas)

AUSRIVAS assessments are carried out at two locations on the Meander river mainstream: at Birralelee Road and at Falls Road and on two tributaries: Jackeys Creek and Liffey River.



**Fig:** Meander River at Birralelee Road.

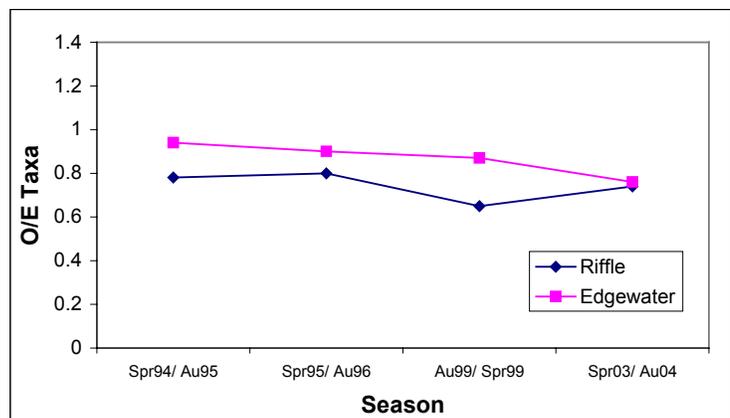
### Meander River at Birralelee Rd

This site is located in the Meander River approximately 2.5 kilometres upstream of the confluence with Quamby Brook. The surrounding land is used primarily for agriculture (grazing) although a picnic area is located on the right-hand bank immediately upstream of Egmont Bridge. Riparian vegetation is sparse and modified by the intrusion of exotic species such as willows, gorse and blackberries.

The river at this point is 22-28 metres wide and is characterised by fast flowing riffles over boulder substrate except for a deeper, slower flowing section which is used as a swimming hole. Water quality was generally good.

Combined season AUSRIVAS assessments of the riffle habitat have classed this site as significantly impaired with losses between 25 and 30% of predicted taxa. The edgewater habitat is in better condition, with most assessments resulting in an equivalent to reference condition (Band A) rating. However a decreasing trend in O/E taxa scores has resulted in this site being classed as significantly impaired (Band B) on its most recent assessment (spring 2003/ autumn 2004).

Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Spr94/ Au95	0.78	B	0.94	A
Spr95/ Au96	0.8	B	0.9	A
Au99/ Spr99	0.65	B	0.87	A
Spr03/ Au04	0.74	B	0.76	B



**Fig:** Combined season AUSRIVAS O/E Taxa scores for the Meander River at Birralelee Road.

## Meander River at Falls Road

This site is located about 400 metres above Mother Cummings Rivulet in the upper reaches of the Meander River, within the Meander State Forest. The site is surrounded by native forest and the riparian zone appears to be in an undisturbed state with the exception of a small area on the left bank, which has been cleared as a picnic area.

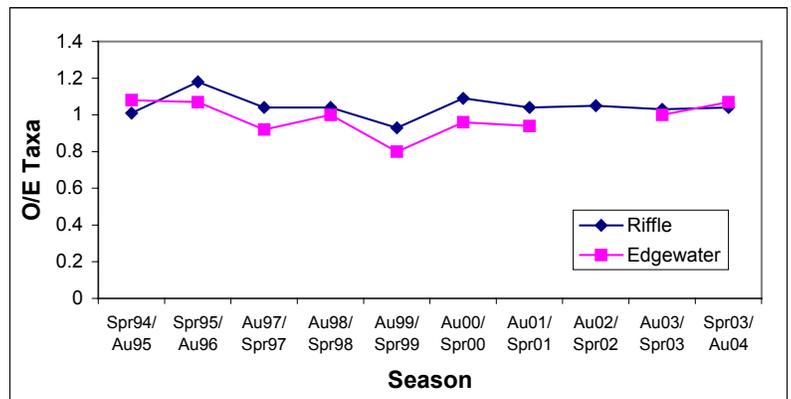
The river at this site is 7-10 metres wide and consists of shallow riffles and runs flowing between large, exposed boulders. Water quality is high with low turbidity, conductivity and nutrients.

This site has been monitored continuously since spring 1994. Single and combined season assessments of the riffle habitat indicate the richness of macroinvertebrate families is similar to that expected at a reference condition site. Similarly, assessments for the edgewater habitat indicate an essentially undisturbed site.



**Fig:** Meander River at Falls Rd.

Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Spr94/ Au95	1.01	A	1.08	A
Spr95/ Au96	1.18	X	1.07	A
Au97/ Spr97	1.04	A	0.92	A
Au98/ Spr98	1.04	A	1	A
Au99/ Spr99	0.93	A	0.8	B
Au00/ Spr00	1.09	A	0.96	A
Au01/ Spr01	1.04	A	0.94	A
Au02/ Spr02	1.05	A		NS
Au03/ Spr03	1.03	A	1	A
Spr03/ Au04	1.04	A	1.07	A



**Fig:** Combined season AUSRIVAS O/E Taxa scores for the Meander River at Falls Road.

# 2004 Waterways Monitoring Report

## Jackeys Creek downstream of Jackeys Marsh

This site, located within the Meander State Forest is in the lower reaches of Jackeys Creek, approximately 1.2 kilometres upstream of the confluence of Jackeys Creek and the Meander River and 1.5 kilometres downstream of DPIWE's streamflow monitoring station. The site is surrounded by dense riparian vegetation, which provides extensive shading. Intrusion by exotic species is minor.

Jackeys creek at this point is 7-10 metres wide and consists of shallow riffle /run sequences. The substrate is predominantly boulder and bedrock.

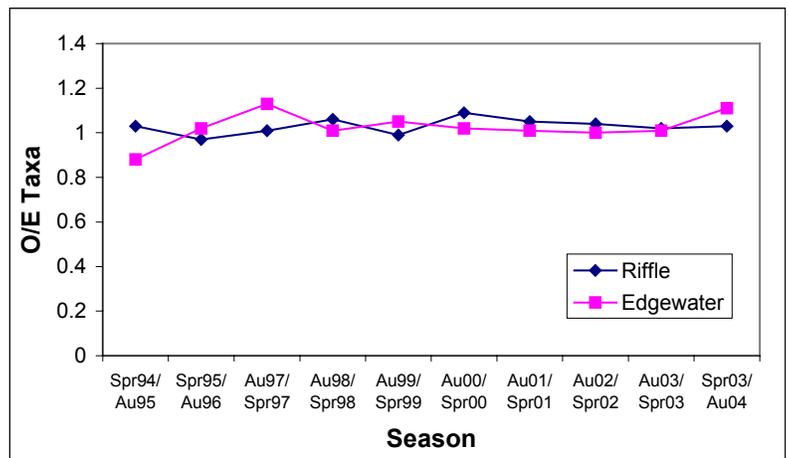
Water quality is generally good with low conductivity and turbidity.

This site has been sampled continuously since spring 1994. All AUSRIVAS assessments for this site indicate high macroinvertebrate richness. All 38 single season assessments for edgewater and riffle habitats have yielded O/E taxa values greater than 0.82 with most values over 1. Similarly, all combined season assessments indicate the macroinvertebrate community is similar to that expected at a reference site.



**Fig:** Jackeys Creek downstream of Jackeys Marsh.

Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Spr94/ Au95	1.03	A	0.88	A
Spr95/ Au96	0.97	A	1.02	A
Au97/ Spr97	1.01	A	1.13	A
Au98/ Spr98	1.06	A	1.01	A
Au99/ Spr99	0.99	A	1.05	A
Au00/ Spr00	1.09	A	1.02	A
Au01/ Spr01	1.05	A	1.01	A
Au02/ Spr02	1.04	A	1	A
Au03/ Spr03	1.02	A	1.01	A
Spr03/ Au04	1.03	A	1.11	A



**Fig:** Combined season AUSRIVAS O/E Taxa scores for Jackeys Creek downstream of Jackeys Marsh.

## Liffey River Upstream of Liffey

This site is within the Liffey Falls Scenic Reserve and approximately 7 kilometres upstream from the town of Liffey. The site is surrounded by native forest however a large section of the right-hand bank has been partly cleared for a camping/ picnic area. The land outside the reserve is used for forestry activities.

The river at this point consists of a single 6-8 metre wide channel, although the river splits into multiple channels above the sampling site. The confined valley, relatively steep gradient and moderate discharges, means that small substrate (sand, gravel, pebbles) are readily transported through this reach, causing the streambed to be dominated by boulders and large cobbles.

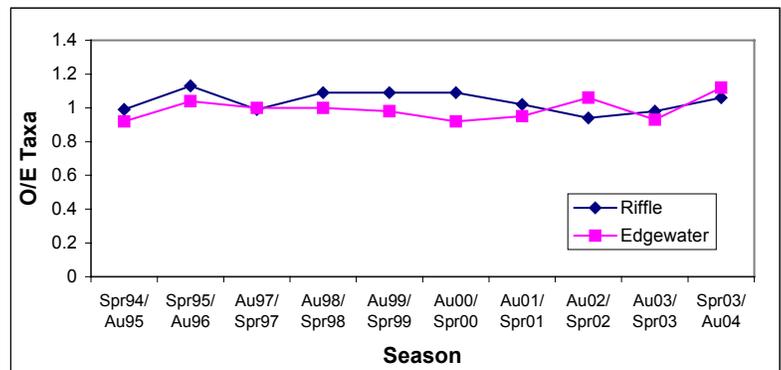
Water quality is very good with low turbidity and nutrient concentrations and with all other physico-chemical variables within expected ranges.

Single and combined season assessments of the riffle and edgewater habitats have classed this site as equivalent to reference (Band A) or above (Band X) on the majority of sampling occasions. However single season edge assessments were highly variable with O/E scores ranging from 0.78 to 1.24. The low scores are a reflection of the limited amount of edgewater habitat available for sampling in a high gradient stream such as this.



**Fig:** Liffey river upstream of Liffey.

Season	O/E Taxa Riffle	Band	O/E Taxa Edgewater	Band
Spr94/ Au95	0.99	A	0.92	A
Spr95/ Au96	1.13	X	1.04	A
Au97/ Spr97	0.99	A	1	A
Au98/ Spr98	1.09	A	1	A
Au99/ Spr99	1.09	A	0.98	A
Au00/ Spr00	1.09	A	0.92	A
Au01/ Spr01	1.02	A	0.95	A
Au02/ Spr02	0.94	A	1.06	A
Au03/ Spr03	0.98	A	0.93	A
Spr03/ Au04	1.06	A	1.12	A



**Fig:** Combined season AUSRIVAS O/E Taxa scores for the Liffey River upstream of Liffey.