

# Event Sampling Report



## Comet Valley and Neighbourhood Catchments April 2006 event summary

### Introduction

This summary report is a collaborative effort by the Fitzroy Basin Association (FBA) and the National Action Plan for Salinity and Water Quality (NAPSWQ). The report summarises water quality sampling results for a flood event in the Comet catchment (April 2006)

### Background

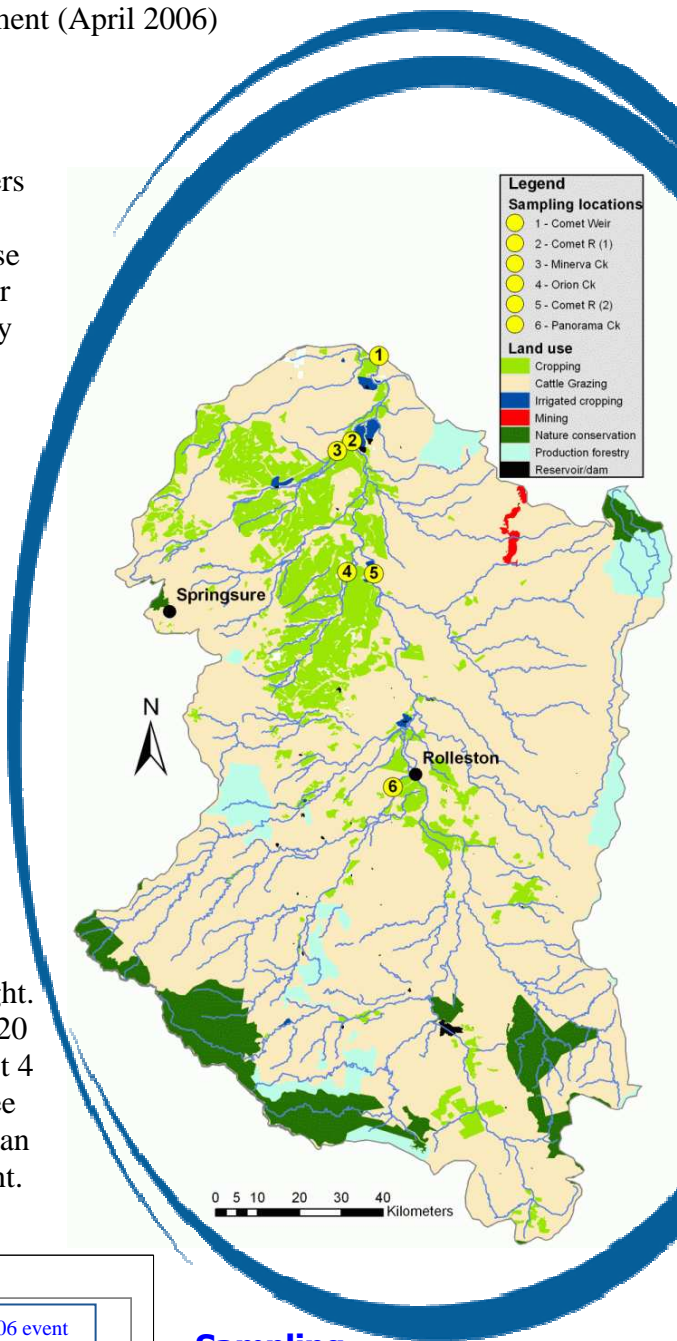
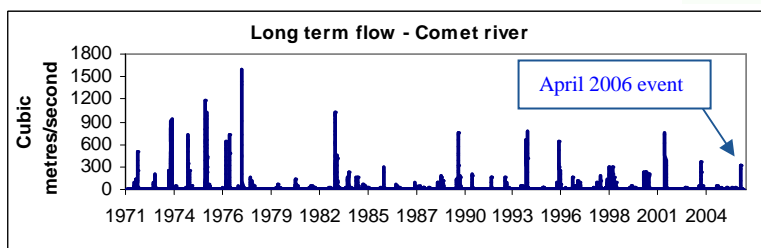
The neighbourhood catchments program, initiated by the FBA, provides a framework to help catchment stakeholders gain a better understanding of water quality issues in their region. This knowledge can then be used to inform land use planning and other management issues that can affect water quality in local creeks and downstream reaches. Community monitoring of water quality in local streams can also provide valuable data for larger scale applications such as modelling and for setting environmental targets.

Event monitoring at a larger scale (eg. entire basin or major sub-catchment) has recently been carried out by the NAPSWQ program and the Department of Natural Resources and Water (NRW) to provide data for various catchment management purposes. The following event summary is an example of how regional community monitoring can enhance catchment scale event data by indicating how land use can influence water quality.

### Catchment and event

The Comet catchment covers 16,400 km<sup>2</sup> with cattle grazing the major land use at around 77%. Cropping occupies around 10% and conservation areas around 7%. Land use and event sampling sites are shown in map at right. The maximum flow discharge for the event was around 320 cubic metres per second. This flow rate is exceeded about 4 days out of each year on average (30 years of record), see graph below to put the April 2006 event in context. It can be seen that conditions were dry leading up to the event.

### Historical flow data



### Sampling

Water samples were collected by community members at sites 2 to 6 shown in map above. Results are shown over page

# Results and observations

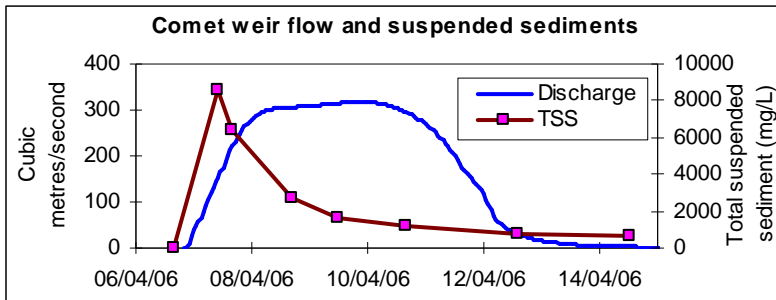


## Rainfall

Widespread rains fell over the Fitzroy catchment from April 4<sup>th</sup> to 11<sup>th</sup> with the Comet region recording the largest totals for the period. The map below right gives cumulative rainfall in a grid pattern. The most intense falls were centred over the middle of the catchment (~ 250mm). Rain events of this type are not uncommon for the region (eg. 2002 event)

## Flow and concentrations

Total event flow and concentration of total suspended sediments (TSS) for Comet weir (end of valley) are shown in graph below, note high initial concentrations (first flush) which decrease rapidly with flow



The number of samples taken for each site, mean, maximum and minimum concentrations for suspended sediments, and nutrients for all sites are given in the table below.

Sample site	number of samples	Suspended sediments (mg/L)			Total Nitrogen (mg/L)			Total Phosphorus (mg/L)		
		mean	max	min	mean	max	min	mean	max	min
1- Comet weir	7	2750	8600	40	3.2	6.6	0.8	2.0	4.3	0.1
2- Comet R (1)	5	1280	2600	560	2.2	4.6	1.5	1.3	2.8	0.7
3- Minerva Ck	2	1700	1700	1700	3.8	3.9	3.7	2.3	2.4	2.2
4- Orion Ck	3	1760	2300	1300	2.6	2.9	2.0	1.4	1.4	1.3
5- Comet R (2)	2	1210	2100	320	2.4	3.6	1.2	1.3	2.1	0.6
6- Panorama Ck	7	2070	5500	1100	3.7	10.3	1.4	2.3	5.8	0.9

It can be seen that the concentrations at site 6 were higher than most downstream sites and this is most likely due to the rainfall intensity in this region. Total event volume for the Comet weir site was around 115,000 megalitres and total event loads were 280,000 tonnes of suspended sediments, 322 tonnes of total nitrogen and 198 tonnes of total phosphorus. Event mean concentrations (EMC), a value calculated by dividing the total load by the event volume (used for input to various simulation models), were 2440, 2.8 and 1.7 mg/L respectively. Concentrations increase below cropping areas (weir site).

## Observations

The concentrations measured at the Panorama Ck site are fairly typical of first flush conditions from grazing lands in the central regions of the Fitzroy basin.

Concentrations have lowered substantially at the next downstream site (5), caution must be used here as only 2 samples were collected. However there is a general trend of decreasing concentrations in a downstream direction away from the area of highest rainfall. Concentrations then increase again at sites 2 and 1 indicating input from cropping regions. Event sampling by community members and staff from the Emerald office of NRW is greatly appreciated. For further information on water quality and catchment management issues in the Fitzroy basin visit the FBA website at [www.fba.org.au](http://www.fba.org.au) or the NAPSQ website at [www.wqonline.info/index.html](http://www.wqonline.info/index.html)

