



# COMMUNITY RIVER HEALTH MONITORING PROGRAM

REPORT CARD - AUTUMN 2010

# RIVER HEALTH REPORT CARD AUTUMN 2010

## A SNAP-SHOT OF RIVER HEALTH

The second sampling campaign for the Community River Health Monitoring Program (Autumn 2010) has been completed. There will be a total of four catchment wide sampling campaigns during the two year program. After each campaign, a new report will be produced.

During four weeks between 16 April and 17 May 2010, a total of 42 sites were monitored with the assistance of Councils, Streamwatch, community groups and The Georges River Environmental Education Centre. The monitoring focused on both

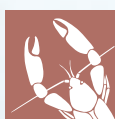
freshwater and estuarine environments in the Georges River catchment, from the headwaters near Appin to Botany Bay.

During sampling, several important river health indices were monitored to provide a 'snap-shot' of catchment health: water quality, vegetation and macroinvertebrates.

By combining the results of the river health indices and accumulating more data as the project moves along, we will gain a greater understanding of the Georges River system.

Findings from this program are being used to identify areas that are of conservation value and where on-ground works have been effective or where remediation works could be carried out in the future.

This study provides a snap- shot of River Health and results are indicative of the conditions present at the individual monitoring sites at the time monitoring was performed.



Fresh water



Estuarine

### MACROINVERTEBRATES

Macroinvertebrates are small animals without a backbone, such as snails, worms, yabbies and crabs. Macroinvertebrate populations provide us with valuable information on the health and quality of the aquatic ecosystem. As they are particularly sensitive to changes in water quality, monitoring macroinvertebrates is providing us with a greater understanding of populations living within the Georges River catchment and of the quality of the aquatic habitat they live in.



### WATER QUALITY

Monitoring water quality is providing us with a better understanding of how urbanisation and changed land use practices are affecting the health of the river and estuarine ecosystems. Many organisms are sensitive to changes in water quality and populations may become stressed if changes to water quality occur. This can lead to reduced population numbers or local species extinction.



### VEGETATION

Healthy riparian (stream bank) and estuarine vegetation are important for maintaining a functioning ecosystem. Vegetation plays a major role in providing habitat, nutrient recycling, regulation of temperature and filtration of stormwater runoff. By monitoring these vegetation communities we are gaining a better understanding of their condition and subsequent effectiveness in maintaining water quality within the Georges River catchment.

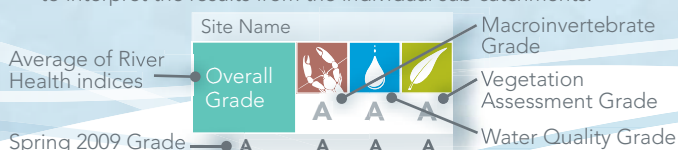
## THE GRADING SYSTEM

River health parameters are assessed against environmental guidelines allowing the award of a grade between A+ and F-.

A+	EXCELLENT
A - B+	GOOD
B - C-	FAIR
D+ - F-	POOR

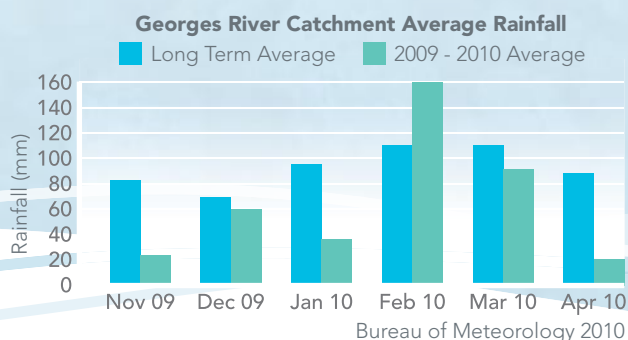
## INTERPRETING GRADING ICONS

This diagram shows an example grading box. Use this example to interpret the results from the individual sub catchments.



## CATCHMENT AVERAGE RAINFALL

With the exception of February 2010, average rainfall across the Georges River Catchment has been below average for all months since spring 2009 monitoring. A particularly dry April resulted in a reduction of storm water and urban run-off entering the river system. As a result, reduced nutrient levels and reduced turbidity were recorded in many parts of the catchment, slightly improving the water quality at many monitoring sites.



**Acknowledgments:** The Georges River Community River Health Monitoring Program was developed by C. Tippler and A. Hanlon and is modeled on the following existing programs: EHMP (2008). Ecosystem Health Monitoring Program 2006-07 Annual Technical Report. South East Queensland Healthy Waterways Partnership, Brisbane. Centre for Environmental Management, Central Queensland University. IWC (2009). Cobaki and Terranora Ecosystem Health Monitoring Program. 2009 technical report. International Water Centre, Brisbane. Story A.W, Anderson L.E, Lynas J & Melville F (2007). Port Curtis Ecosystem Health Report Card. Port Curtis Integrated Monitoring Project (PCIMP). Cover photography by C.Tippler.

# UPPER GEORGES RIVER REPORT CARD AUTUMN 2010

## OVERALL RIVER HEALTH

**C** The overall grade of the Georges River Catchment remains 'fair'.

**C+** Below average autumn rainfall led to reduced storm water discharge to waterways, creating a positive effect to water quality across most of the catchment. When compared with results from the spring 2009 monitoring period, reductions in nutrient loads and turbidity levels were observed across a number of sites. Slight changes were observed in macroinvertebrate communities; however these are most likely to be seasonally driven. Future monitoring throughout the catchment should provide a greater understanding of factors affecting these macroinvertebrate communities.

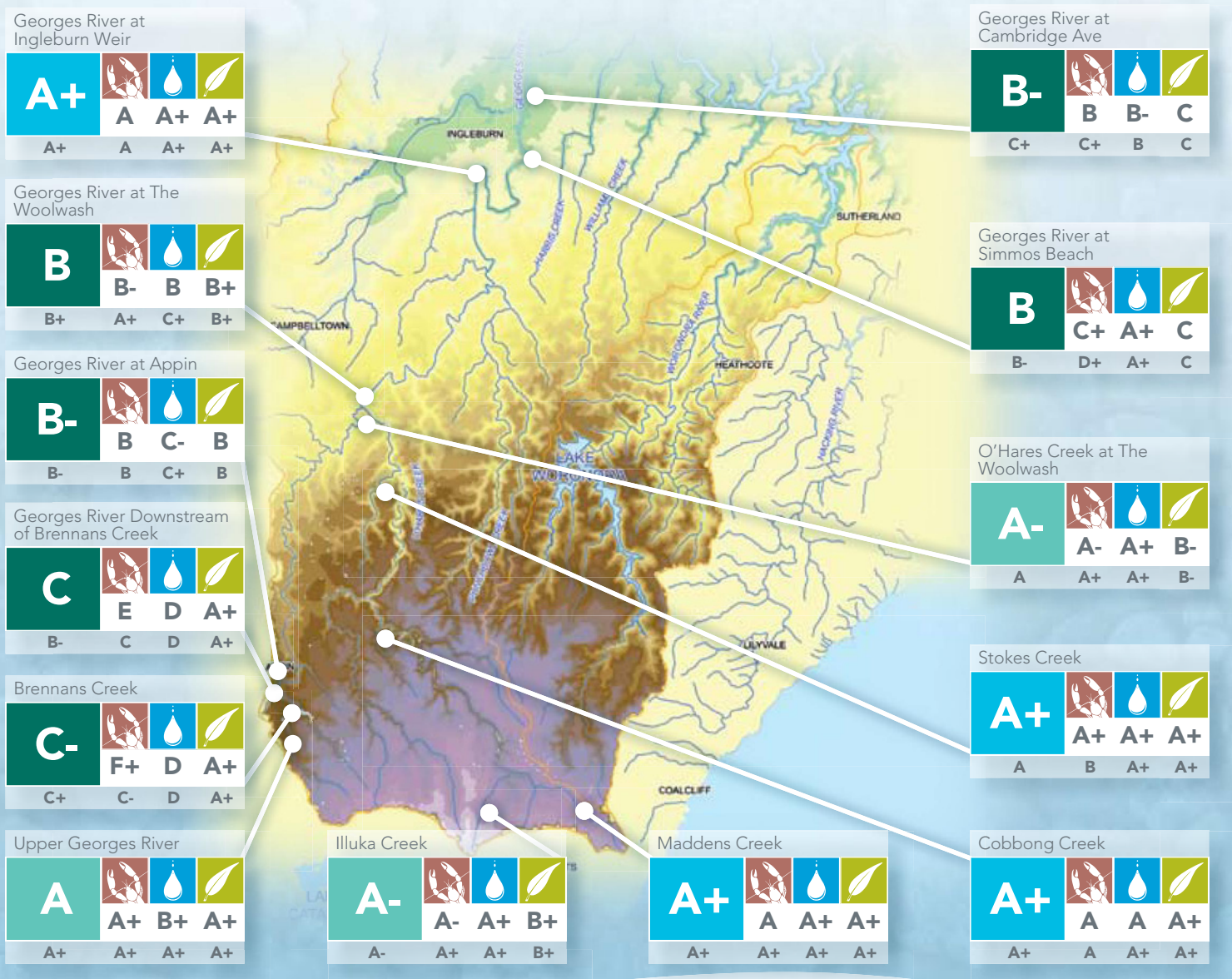
## FRESHWATER SITES - 13

### OVERALL SUMMARY

**B+** **B+** **B+** **A-**

**B+** **B+** **A-** **A-**

No change to the overall grade of the upper catchment was observed during autumn monitoring. Reductions in turbidity levels were observed at sites around Appin, however nutrient concentrations, pH and conductivity levels remained high in these areas. Slight variations were observed among macroinvertebrate communities; however these are most likely to be seasonally driven.



# MID GEORGES RIVER REPORT CARD AUTUMN 2010

## FRESHWATER SITES - 11

### OVERALL SUMMARY



No change to the overall grade of freshwater areas in the mid catchment was observed during autumn monitoring. Reductions in turbidity and nutrient loads were observed across most sites. Large fluctuations in macroinvertebrate populations were observed across sites however this is mostly likely to be the result of seasonal influences on species composition. Macroinvertebrate populations in Prospect Creek appeared to have improved after flooding occurred during spring 2009 monitoring.

## ESTUARY SITES - 4

### OVERALL SUMMARY



There was a slight yet non-significant change to the overall grading of estuarine areas in the Mid Georges River catchment following autumn monitoring, however the overall condition of 'fair' remained unchanged. Grading for water quality improved, however a change in estuarine macroinvertebrates was observed which was most likely due to a seasonally driven variation within populations.

Upper Orphan School Creek



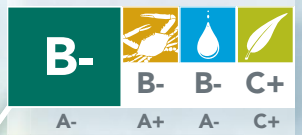
Upper Prospect Creek



Lower Prospect Creek



Lt. Cantello Reserve



Lower Orphan School Creek



Yaramba Lagoon

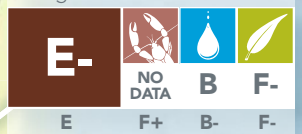


Although functioning as a wetland for many years, Yaramba Lagoon has been assessed as a highly modified creek.

Hinchinbrook Creek



Morgan's Creek



Due to dry conditions at the time of sampling, no macroinvertebrate data was collected.

Upper Cabramatta Creek



Salt Pan Creek



Lower Cabramatta Creek



Barden Creek



Mill Creek



Morgan's Creek Estuary



Mill Creek Estuary



# LOWER GEORGES RIVER REPORT CARD AUTUMN 2010

## FRESHWATER SITES - 7

### OVERALL SUMMARY



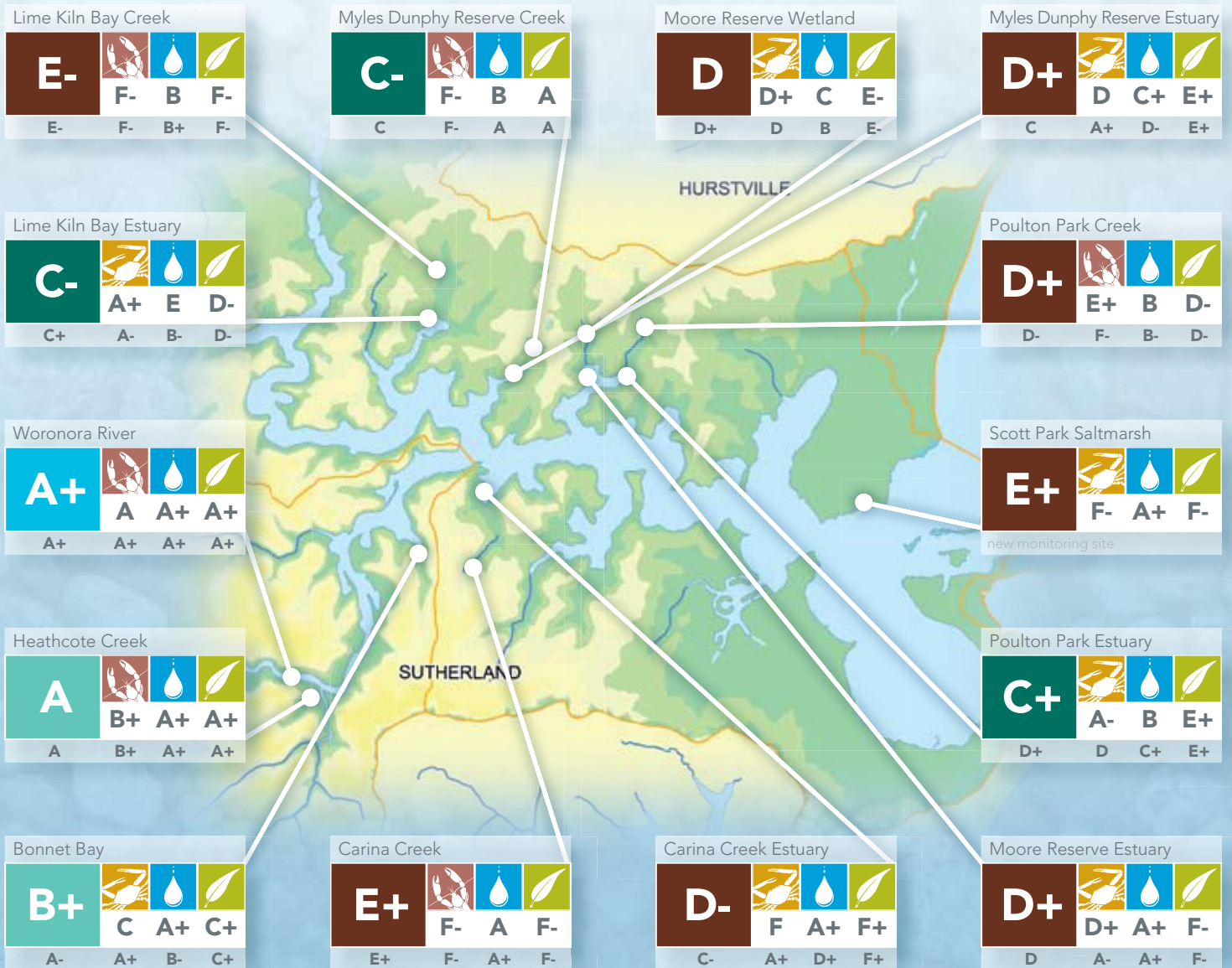
There was a slight yet non-significant change to the overall grading of freshwater areas in the Lower Georges River catchment following autumn monitoring, however the overall condition of 'fair' remained unchanged. Increased nutrient loads were observed at some sites, however macroinvertebrate grades displayed improvements indicative of a recovery from local flooding during spring 2009. These improvements are likely to be a return to normal populations for highly urbanised waterways, yet indicate these areas are prone to persistent nutrient rich stormwater inputs that adversely affect the health of the aquatic ecosystem.

## ESTUARY SITES - 7

### OVERALL SUMMARY



No change to the overall grading of estuarine areas in the Lower Georges River catchment was recorded during autumn monitoring. Reduced turbidity and chlorophyll-a levels were observed across sites. This is likely to be due to the dry conditions experienced during autumn monitoring which lead to reduced stormwater inflows to the lower estuary. A slight reduction was recorded across macroinvertebrate populations; however this is also likely to be a seasonally driven fluctuation and further sampling will help to determine this. The 'Scarborough Ponds' site in Rockdale was replaced by a new site known as 'Scott Park Saltmarsh'.



# THE GEORGES RIVER CATCHMENT

The Georges River begins its journey approximately 60km south-west of Sydney in the town of Appin. From here the river flows north towards Liverpool, through the Chipping Norton Lakes, then east until it reaches Botany Bay.

The catchment area of Georges River covers an area of approximately 960 km<sup>2</sup> and, with over 1 million people living within its boundaries, is one of the most highly urbanised catchments in Australia.

The river has a number of important tributaries including Bunbury Curran Creek, Cabramatta Creek, Prospect Creek, Williams Creek, Salt Pan Creek, Mill Creek, and the Woronora River.

The Georges River catchment has two broad soil groups. The western part of the catchment is predominantly fertile soil derived from Wianamatta Shale while deeply incised Hawkesbury Sandstone valleys predominate the northern, southern and eastern catchment areas.

This report card is the second in a series of four that will be released following each monitoring campaign. Project methodology and past report cards will be available on the website [www.georgesriver.org.au](http://www.georgesriver.org.au)

For enquiries email: [riverhealth@georgesriver.org.au](mailto:riverhealth@georgesriver.org.au)

