

RIVER HEALTH REPORT CARD AUTUMN 2011

A SNAP-SHOT OF RIVER HEALTH

The autumn 2011 sampling campaign for the Community River Health Monitoring Program has been completed. This is the fourth sampling event conducted under current Australian Government funding.

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.

The Community River Health Program encourages the participation of community members to become involved in monitoring activities. Volunteers work alongside

scientists collecting valuable data used to assess the ecological condition of the Georges River.

Since 2009, volunteers have contributed over 1700 hours of field work to the program and gained a valuable insight into the dynamic nature of the Georges River system.



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.

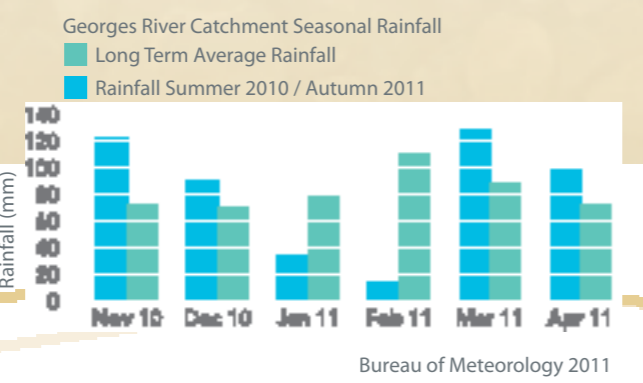
THE GRADING SYSTEM

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

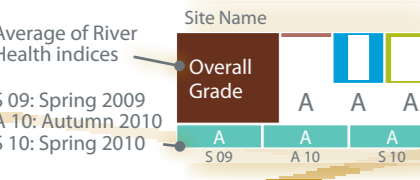
CATCHMENT AVERAGE RAINFALL

Above average rainfall fell across the Georges River catchment during spring 2010, which was followed by a very dry summer period resulting in rainfall levels well below long term averages. The dry spell ended in March 2011 with above average falls across the catchment throughout early and mid autumn.



INTERPRETING GRADING ICONS

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



Acknowledgments: The Georges River Community River Health Monitoring Program was developed by C. Tippler, A. Hanlon and P. Birtles and is modeled on the following existing programs: 1. 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. 2. IWC (2009). Cobaki and Terranora Ecosystem Health Monitoring Program. 2009 technical report. International Water Centre, Brisbane. 3. 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, ©GRCCC Community River Health Monitoring Program Report Card autumn 2011

THE GEORGES RIVER CATCHMENT

With a total area of 960 km² and lying between the altitudes of 440m to sea level, the Georges River catchment is located adjacent to and including the south western corner of the Sydney metropolitan area, NSW, Australia. Fourteen local government areas are located within the Georges River catchment. These council areas include: Blacktown, Holroyd, Canterbury, Camden, Wollongong, Wollondilly, Campbelltown, Liverpool, Fairfield, Bankstown, Sutherland, Kogarah, Rockdale and Hurstville Councils. The last nine councils are GRCCC member councils.

The catchment is divided into two broad soil groups. The western area of the catchment has predominantly fertile soil derived from Wianamatta Shale while deeply incised Hawkesbury Sandstone valleys dominate the northern, southern and eastern catchment areas. Land use within the catchment is mixed. Usage includes industrial, agricultural, mining, a large area of defence force land and protected areas such as drinking water catchments and conservation areas. The catchment area supports nearly 1.2 million people while approximately 45% of the catchment remains in natural or near natural condition.



GEORGES RIVER CATCHMENT GEOLOGY

- Georges River Catchment
- Drainage
- Wianamatta Shale
- Hawkesbury Sandstone
- Narrabeen Sandstone
- Blayney Coal Measures

RECOGNITION OF RIVER HEALTH

Results from River Health monitoring are being used by GRCCC member councils to target areas throughout the catchment in need of restoration. Scott Park Salt Marsh, Carina Creek, Morgan's Creek, Myles Dunphy Reserve, Moore Reserve Wetland and Prospect Creek each have projects being undertaken to enhance the ecological condition of these areas.

The success of the River Health program has been recognised by the Australian Government who has provided further funding to continue the

program until 2013. This has led to the formation of a partnership between GRCCC and Cooks River Alliance which will see River Health monitoring expand to the Cooks River catchment in spring 2011.

The GRCCC Community River Health Monitoring Program was nominated as a finalist in two categories of the NSW Government Green Globe Awards and recently won the 2011 Urban Landcare Award.

The GRCCC represents Local Government in the Georges River Catchment of NSW. Member Councils include Rockdale City, Sutherland Shire, Kogarah City, Hurstville City, Bankstown City, Liverpool City, Fairfield City, Campbelltown City and Wollondilly Shire Councils. The Community River Health

Monitoring Program is being undertaken in association with the Georges River Environmental Education Centre, Sydney Water Corporation, Sydney Metropolitan Catchment Management Authority and the NSW Office of Environment and Heritage. It is funded by the Australian Government's Caring for Our Country Program.



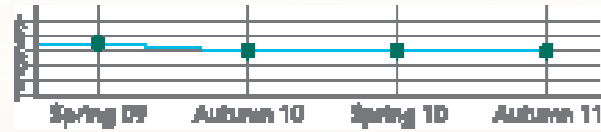
COMMUNITY RIVER HEALTH MONITORING PROGRAM REPORT CARD - AUTUMN 2011



UPPER GEORGES RIVER REPORT CARD AUTUMN 2011

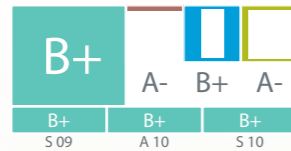
OVERALL RIVER HEALTH

No change to the overall grade for the Georges River catchment was recorded during autumn 2011 monitoring with the ecological condition remaining fair. This result indicates that over the last two years of monitoring the condition of the Georges River catchment has remained stable. Good riparian vegetation and water quality were found across most parts of the upper catchment and portions of the lower catchment, however degraded water quality and macroinvertebrate communities continue to be recorded in the highly urbanised areas. Stormwater and urban and industrial runoff combined with degraded riparian vegetation continue to contribute to degraded water quality which is reflected in the macroinvertebrate communities which display lower diversity and are dominated by pollution tolerant species.

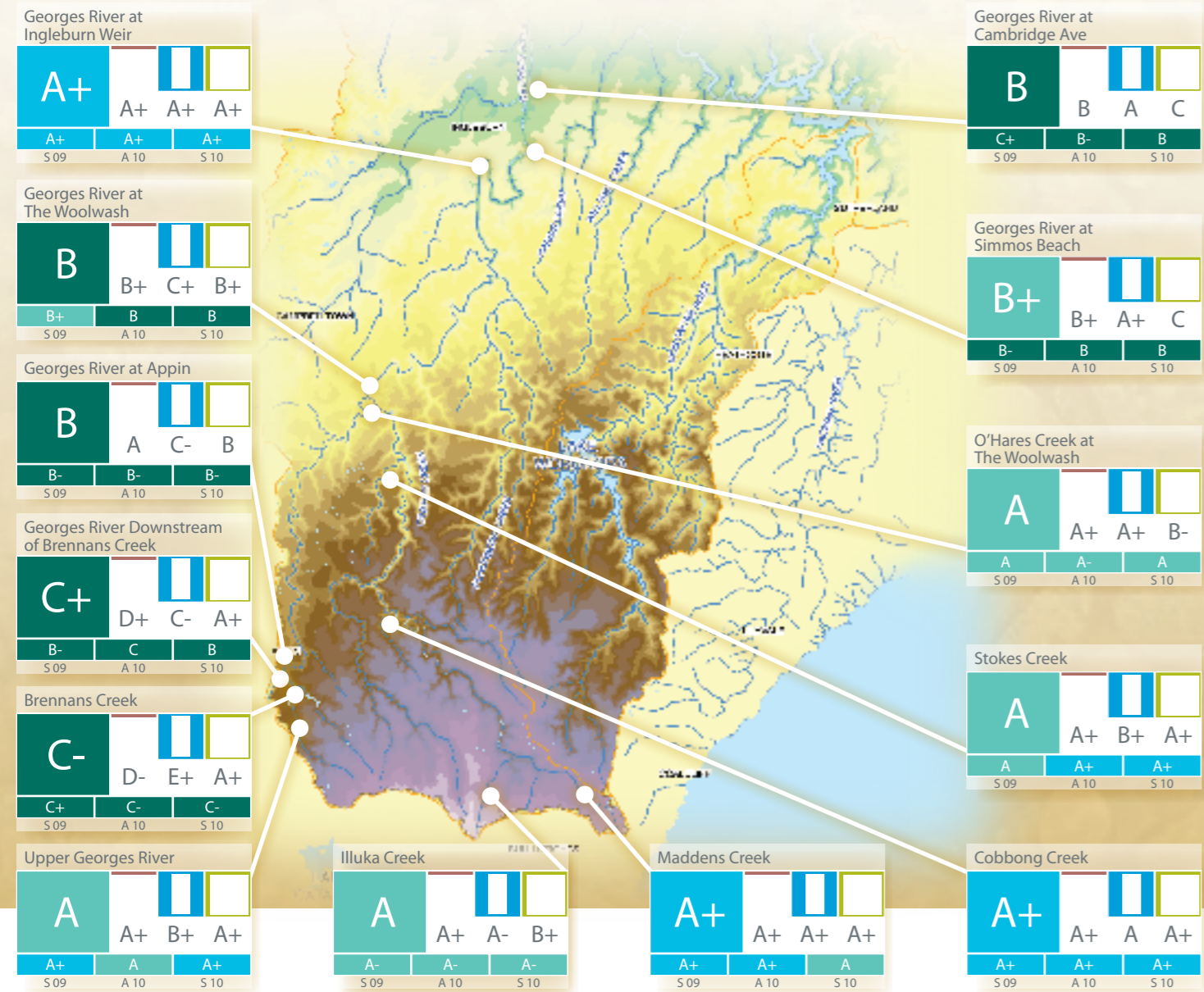


FRESHWATER SITES - 13

OVERALL SUMMARY



The River Health grade of B+ for the upper catchment is consistent with results from previous monitoring period, which indicates that the condition of most of the waterways in the upper catchment is good. Excellent water quality, riparian vegetation and macroinvertebrate populations in Illuka Creek, Cobbong Creek, O'Hares Creek and Upper Georges River contribute to maintaining the health of the ecosystem of the upper catchment, highlighting the importance of the Dharawal State Conservation Area. Contrary to this, degraded water quality and aquatic biodiversity has consistently been detected in Brennan's Creek, around the township of Appin and further downstream in the Campbelltown area. These results stem from the combination of industrial discharge and urban run-off entering the river system at various points throughout the upper catchment.

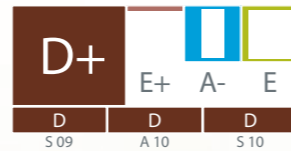


Map cannot be used for land use interpretation

MID GEORGES RIVER REPORT CARD AUTUMN 2011

FRESHWATER SITES - 11

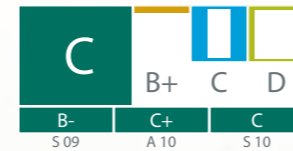
OVERALL SUMMARY



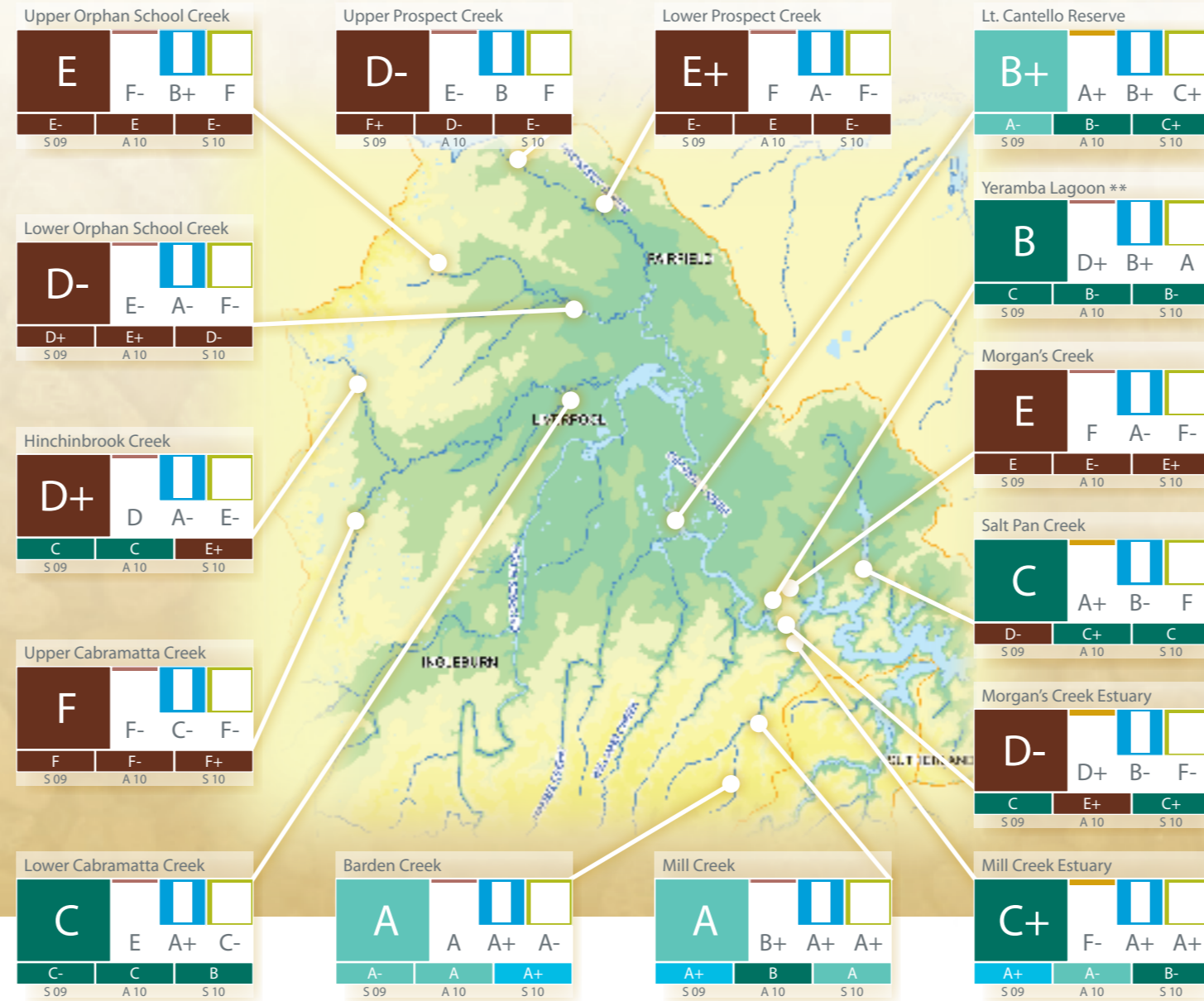
The overall grade for the mid sub catchment was D+ indicating the condition of fresh ecosystems in this sub-catchment is poor. Reduced macroinvertebrate diversity in the mid Georges River catchment is the result of stormwater, urban and industrial run-off contributing nutrient enriched, chemically altered waters to natural waterways in the area. In addition, urbanisation has led to riparian vegetation being significantly altered or completely removed in this part of the catchment adding to the ecological decline of the waterways of the mid Georges River catchment. In contrast, Barden Creek continues to display conditions similar to those found in the clean upper areas of the catchment which is a direct result of the lack of catchment disturbance and intact vegetation.

ESTUARY SITES - 4

OVERALL SUMMARY



A slight yet non-significant change in the grade of estuarine areas in the mid catchment was recorded during autumn 2011 monitoring, however the ecological condition remains fair. Macroinvertebrate biodiversity throughout this part of the catchment remained stable, although water quality was slightly lower than previously recorded with low dissolved oxygen and elevated turbidity levels recorded across a number of sites. It is likely that the wet conditions experienced during autumn 2011 resulted in nutrient enriched, turbid stormwater and urban and industrial run-off entering the estuary, causing the decline in water quality observed.

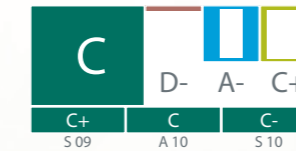


** Although functioning as a wetland for many years, Yeramba Lagoon has been assessed as a highly modified creek.

LOWER GEORGES RIVER REPORT CARD AUTUMN 2011

FRESHWATER SITES - 7

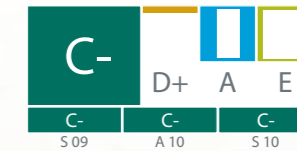
OVERALL SUMMARY



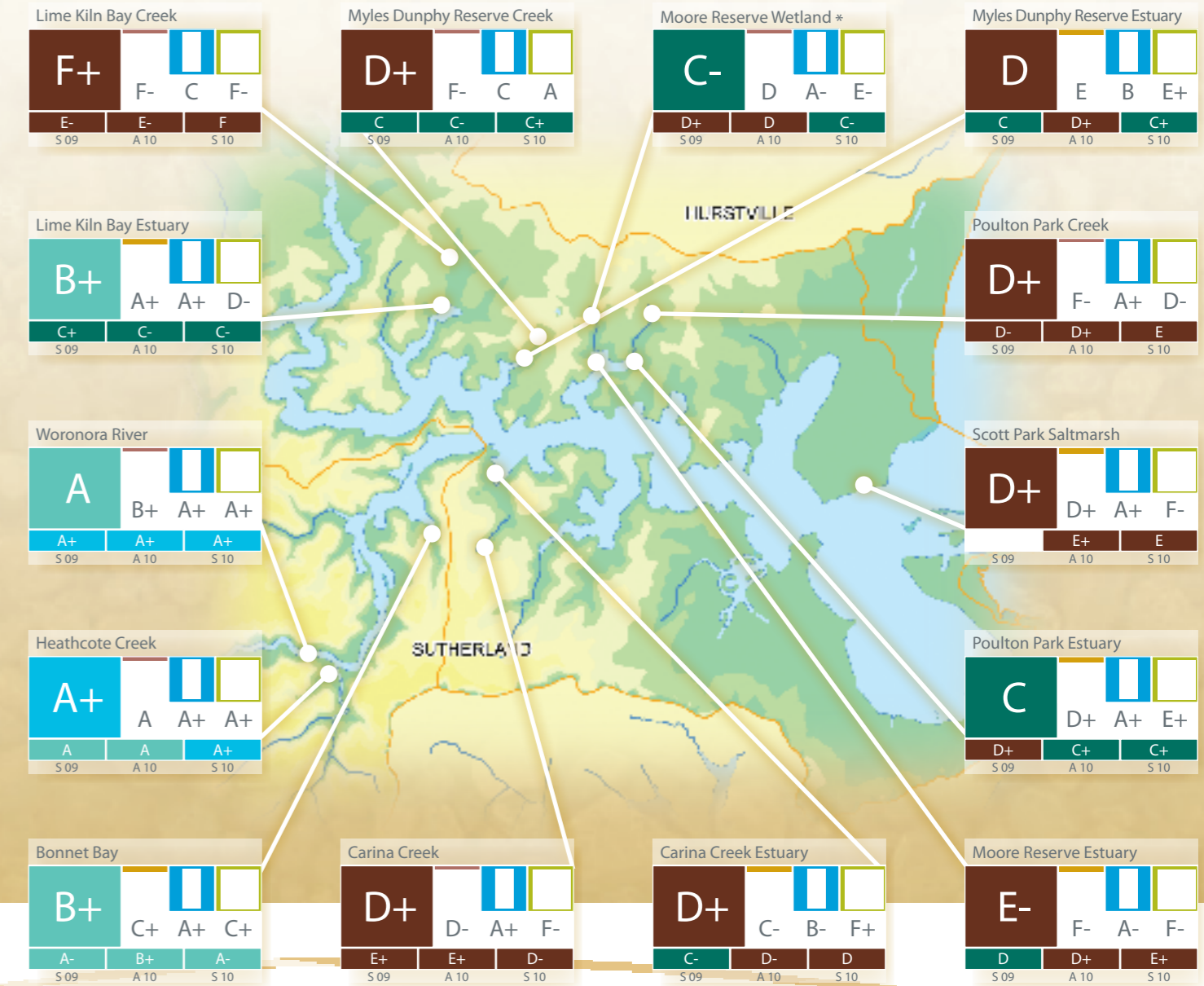
The overall grade for the lower sub catchment was C which indicates that the condition of freshwater ecosystems in this subcatchment is fair. Waterways within the highly urbanised parts of the lower catchment displayed elevated nutrient levels, altered chemical properties and severely degraded riparian vegetation. These factors in combination with altered stream flows and habitat modification, due to urbanisation, were reflected in the sampling results which found macroinvertebrate communities low in diversity and lacking in sensitive species. In contrast, Heathcote Creek and Woronora River remain in good ecological condition; similar to sites found in the clean upper areas of the catchment due to minimal urbanisation within each of these sub catchments.

ESTUARY SITES - 7

OVERALL SUMMARY



No change to the overall grade of estuarine areas in the lower catchment was observed during autumn 2011 monitoring with the ecological condition remaining fair. Slight fluctuations in macroinvertebrate communities were observed across monitoring sites, and constant tidal flushing is likely to have maintained reasonable water quality in the lower end of the catchment despite an increase in the volume of stormwater entering the lower estuary due to the wet conditions experienced during autumn 2011.



* This site has been specifically designed to capture and treat stormwater

