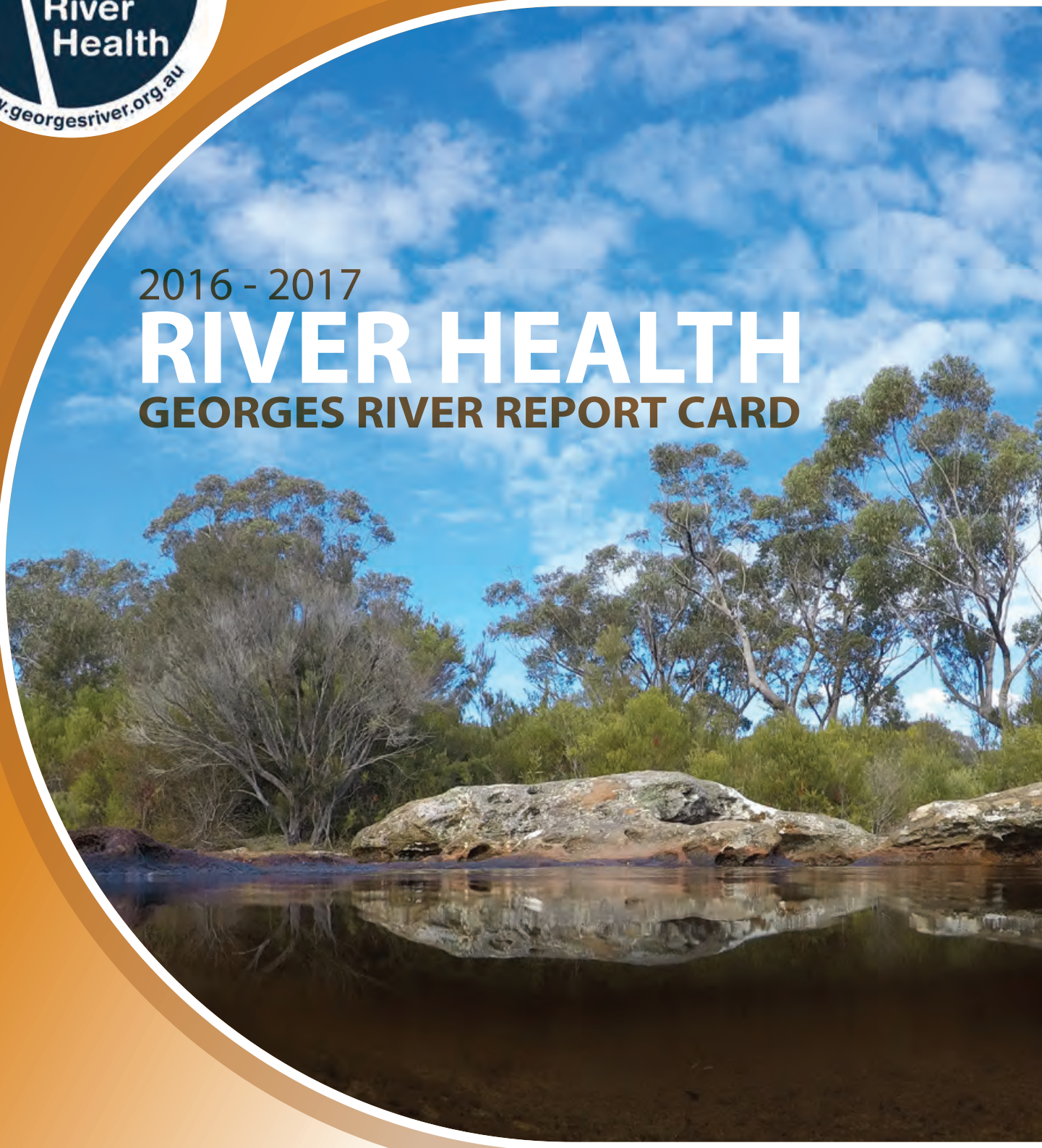
River Health

www.georgesriver.org.au

2016 - 2017

RIVER HEALTH

GEORGES RIVER REPORT CARD



GRCCC

Georges River Combined Councils' Committee Inc.

YOUR GEORGES RIVER IS BEAUTIFUL...

Maddens Creek, O'Hares Creek subcatchment

Frere's Crossing, Mid Georges River

Kogarah Bay, Lower Georges River

Towra Point, Georges River mouth

CARE FOR IT BY...

Visiting and enjoying the river.

Getting involved in local community groups, such as Bushcare.

Planting locally native plants, installing a rainwater tank or building a raingarden to use water around your house.

Keeping everything except water out of gutters, as rain carries pollution from gutters to the river.

GRCCC Georges River Combined Councils' Committee Inc.

The GRCCC represents member councils in the Georges River catchment of NSW, including Campbelltown, Canterbury Bankstown, Fairfield, Georges River, Liverpool, Bayside, Sutherland and Wollondilly.

The River Health Monitoring Program is being undertaken in association with Georges River Environmental Education Centre and the NSW Office of Environment and Heritage. River Health is funded by the member councils of the GRCCC.

FIND US AT

Georges River, NSW
georgesriver.org.au

Acknowledgments: The River Health Monitoring Program was developed by C. Tippler, A. Hanlon and P. Birtles and is modelled 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). Front cover photography by Xanthe Reid, panoramic photography by David Reid. © 2016 – 2017 River Health Georges River Report Card.

GEORGES RIVER CATCHMENT GRADES

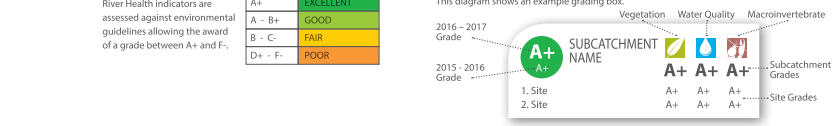
GRADING SYSTEM

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

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

INTERPRETING GRADING ICONS

This diagram shows an example grading box.



MAP KEY

Stippling indicates land is mainly urban, otherwise land is mainly bushland.

Not monitored, owing to restricted access.

Council boundary

Subcatchment boundary

RIPARIAN VEGETATION

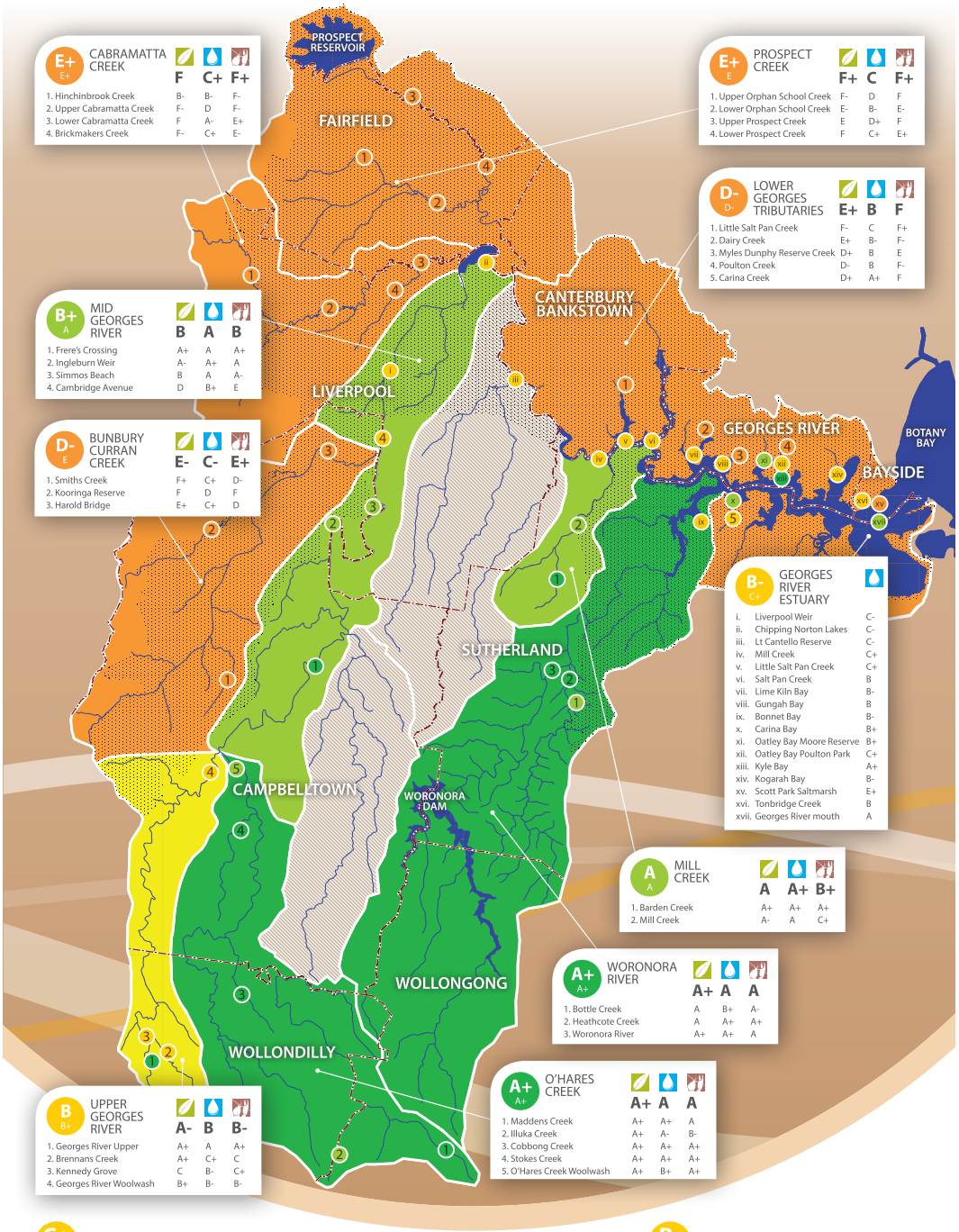
Riparian vegetation are plants living along the edges of waterways. They contribute to maintaining the condition of waterways by stabilising banks with roots, dropping leaves and wood that act as important habitat for native animals, nutrient processing as they grow, regulation of temperature via canopy shade and filtration of pollutants that may otherwise enter waterways in overland flow.

WATER QUALITY

All aquatic plants and animals have specific water quality requirements. They will not survive in water where depleted amounts of desirable materials or elevated amounts of undesirable materials are outside of their tolerance limits. River Health monitors water quality indicators in the main channel, tributaries and estuary of the Georges River catchment throughout the year. Determining which water quality indicators are depleted and elevated at different locations provides valuable information about effects of urbanisation and other land uses on waterways across the Georges River catchment.

FRESHWATER MACROINVERTEBRATES

Macroinvertebrates are small animals without backbones, such as worms, snails and insects. They have diverse habits and life histories. Organisms that live in freshwater streams vary in their sensitivities to changes in water quality and habitat. River Health surveys macroinvertebrates in spring and autumn each year. Determining which macroinvertebrates can and can't live at particular locations provides valuable information about freshwater ecosystem condition across the Georges River catchment.



E+ CABRAMATTA CREEK — F | C+ | F+

1. Hinchinbrook Creek	B-	B-	F-
2. Upper Cabramatta Creek	F-	D	F-
3. Lower Cabramatta Creek	F	A-	E+
4. Brickmakers Creek	F-	C+	E-

E+ PROSPECT CREEK — F+ | C | F+

1. Upper Orphan School Creek	F-	D	F
2. Lower Orphan School Creek	E-	B-	E-
3. Upper Prospect Creek	E	D+	F
4. Lower Prospect Creek	F	C+	E+

D- LOWER GEORGES TRIBUTARIES — E+ | B | F

1. Little Salt Pan Creek	F-	C	F+
2. Dairy Creek	E+	B-	F-
3. Myles Dunphy Reserve Creek	D+	B	E
4. Poulton Creek	D-	B	F-
5. Carina Creek	D+	A+	F

B+ MID GEORGES RIVER — B | A | B

1. Frere's Crossing	A+	A	A+
2. Ingleburn Weir	A-	A+	A
3. Simmos Beach	B	A	A-
4. Cambridge Avenue	D	B+	E

D- BUNBURY CURRAN CREEK — E- | C- | E+

1. Smiths Creek	F+	C+	D-
2. Kooringa Reserve	F	D	F
3. Harold Bridge	E+	C+	D

B- GEORGES RIVER ESTUARY

i.	Liverpool Weir	C-
ii.	Chipping Norton Lakes	C-
iii.	Lt Cantello Reserve	C-
iv.	Mill Creek	C+
v.	Little Salt Pan Creek	C+
vi.	Salt Pan Creek	B
vii.	Lime Kiln Bay	B-
viii.	Gungah Bay	B
ix.	Bonnet Bay	B-
x.	Carina Bay	B+
xi.	Oatley Bay Moore Reserve	B+
xii.	Oatley Bay Poulton Park	C+
xiii.	Kyle Bay	A+
xiv.	Kogarah Bay	B-
xv.	Scott Park Saltmarsh	E+
xvi.	Tonbridge Creek	B
xvii.	Georges River mouth	A

A MILL CREEK — A | A+ | B+

1. Barden Creek	A+	A+	A+
2. Mill Creek	A-	A	C+

A+ WORONORA RIVER — A+ | A | A

1. Bottle Creek	A	B+	A-
2. Heathcote Creek	A	A+	A+
3. Woronora River	A+	A+	A

A+ O'HARES CREEK — A+ | A | A

1. Maddens Creek	A+	A+	A
2. Illuka Creek	A+	A-	B-
3. Cobbong Creek	A+	A+	A+
4. Stokes Creek	A+	A+	A+
5. O'Hares Creek Woolwash	A+	B+	A+

B UPPER GEORGES RIVER — A- | B | B-

1. Georges River Upper	A+	A	A+
2. Brennans Creek	A+	C+	C
3. Kennedy Grove	C	B-	C+
4. Georges River Woolwash	B+	B-	B-

C+ OVERALL FRESHWATER GRADE

B- OVERALL ESTUARY GRADE

A SNAP-SHOT OF OVERALL CATCHMENT HEALTH

The Georges River catchment covers approximately 960 km². The Georges River begins its journey 60 km south west of the Sydney CBD near the town of Appin and flows north towards Liverpool, before turning east at Chipping Norton Lakes to the mouth of the river at Botany Bay.

Since 2009, the River Health Program has compared the ecological condition of waterways across the Georges River catchment and assessed changes over time. The waterways which are assessed are representative of those occurring across the nine major subcatchments contributing fresh water to the Georges River, plus the 46 km of estuary in the main channel of the river which is influenced by tides (from Liverpool Weir down to Botany Bay). Ecological condition is determined by measuring three important ecological indicators; riparian vegetation, water quality and macroinvertebrates (see information above map).

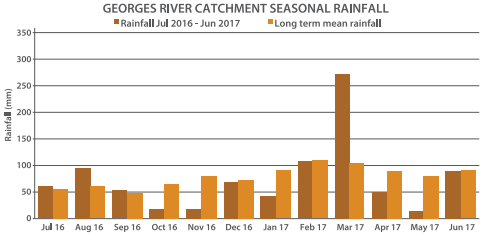
The overall ecological condition of freshwater reaches across the Georges River catchment in 2016 – 17 was 'Fair'. The grade of C+ was the same as for the previous year, but indicative of a slight decline in condition over the past few years. As for past years, the highest grades occurred in those subcatchments with much native forest, whilst urbanised waterways had lower grades.

The sites in subcatchments that are surrounded by largely intact native forest (i.e. Mid Georges River, O'Hares Creek, Woronora River and Mill Creek) generally had 'Good' to 'Excellent' ecological condition. Such waterways are not adversely impacted by polluted stormwater from upstream and the intact riparian vegetation provides some buffering which protects waterways from pollutants entering from surrounding land. In forested subcatchments, the water quality usually complied with national guidelines and the macroinvertebrate communities were relatively diverse. Those communities included pollution-sensitive animals, such as mayflies and caddisflies. The Upper Georges River subcatchment is also surrounded by native forest, but water quality and macroinvertebrate communities are detrimentally effected by upstream mining.

The ecological condition is detrimentally affected in waterways located in subcatchments which are predominantly urbanised (i.e. Bunbury Curran Creek, Cabramatta Creek, Prospect Creek and Lower Georges River tributaries). Typically the sites in urban subcatchments had 'Poor' riparian vegetation and macroinvertebrate communities, whilst water quality was generally 'Fair'. In urban waterways, there were low diversities of macroinvertebrates, with predominantly pollution-tolerant animals, such as snails, fly larvae and worms.

The ecological condition of the Georges River estuary was 'Fair'. The B- grade was similar to that over the past few years. The poorest water quality occurred in the upper section of the estuary that receives pollutants in stormwater flows from upstream urbanised subcatchments and minimal tidal flushing. The downstream portion of the estuary is flushed by regular tidal water movement, with 'Good' water quality at the river mouth. The water quality was typically 'Fair' in the main river channel and bays between Chipping Norton Lakes and the river mouth, with tidal flushing unable to counter inputs of pollutants from urban areas.

GEORGES RIVER CATCHMENT SEASONAL RAINFALL



COUNCILS IN THE GEORGES RIVER CATCHMENT ARE IMPROVING RIVER HEALTH

SUTHERLAND SHIRE COUNCIL
WATERCOURSE ASSESSMENT AND REHABILITATION PRIORITISATION

Sutherland Shire Council's Watercourse Assessment and Rehabilitation Prioritisation Study aids prioritization of waterway rehabilitation actions. The main priority action is rehabilitating riparian buffer zones to improve water quality and stabilise stream banks. The study guided the implementation of native bush regeneration, weed control, banks stabilisation and flow management at Tudar Road Wetland, near Jannali. Those works have successfully contained all water flows and reduced siltation using a constructed swale. Native plantings are now established, with evidence of native plant germination and reduced spread of weeds downstream.

CAMPBELLTOWN CITY COUNCIL
ROSE PARK GROSS POLLUTION TRAP EDUCATION PROGRAM

The Rose Park GPT Education Program was designed by Campbelltown Council to teach high school students about greenfield developments, pollution across catchments, gross pollution traps and ways of reducing litter. During an excursion to Simmos Beach and Woodbine Reserve, students had hands-on experiences in ecological surveys, water quality testing and discussed the fit-for-purpose design of pollution traps. The multiple benefits for wildlife and humans of protecting water supply catchments was highlighted during an excursion to Cataract Dam, whilst stormwater treatment was demonstrated at Sydney Olympic Park.

BAYSIDE COUNCIL
RIPARIAN REHABILITATION AT TONBRIDGE CREEK

Bayside Council has increased the area and health of riparian vegetation along many waterways, including along the important fish nursery in Tonbridge Creek. Works have included weeding, mulching and thousands of native plantings, which has stabilized banks, reduced sedimentation, improved the condition of endangered ecological vegetation communities, enhanced habitats for native animals and reduced the spread of weeds.

LIVERPOOL CITY COUNCIL
LIVERPOOL COUNCIL WATERWAY MONITORING PROGRAM

Liverpool City Council plans for the CBD to become a true river city, which takes advantage of the amenity provided by its proximity to the Georges River. The Council is undertaking targeted waterway monitoring, to guide management to counter pressures from land use intensification. The ecological condition of strategically selected sites will be monitored to provide baseline information about current conditions and allow assessment of changes in condition over time. In the Georges River catchment, water quality will be monitored to determine potential recreational uses of the river and Chipping Norton Lakes.

WOLLONDILLY SHIRE COUNCIL
KENNEDY CREEK REHABILITATION

Wollondilly Council used Green Army teams to control sedimentation and weeds along Kennedy Creek, with a focus on privet, moth vine, honeysuckle and blackberry. Kennedy Creek is in the Upper Georges River subcatchment, which includes land that is a Koala Core habitat corridor. Council and the Office of Environment and Heritage have surveyed koala numbers and movement, with funding from the Saving Our Species Fund.

FAIRFIELD CITY COUNCIL
BROMLEY STREET REHABILITATION PROJECT

The bank at Bromley Street, Canley Vale was eroding into Prospect Creek. Without remediation, the erosion posed a threat to the sewerage and road infrastructure, plus the local environment. Rehabilitation included replacing and realigning the stormwater pipe, removal of some concrete and road pavement, stabilizing the bank with rip rap and replanting the regraded bank with native vegetation to hold soils together.

GEORGES RIVER COUNCIL
URBAN HABITAT TREES

Georges River Council has transformed dead, poisoned or potentially dangerous trees in urban areas into habitat for native wildlife. Rather than removing the whole tree, Council removes dangerous branches and creates hollows suitable as safe havens for a range of species. Habitat trees are located in Peakhurst Heights, Oatley Memorial Gardens, Myles Dunphy Reserve, Johnstone Reserve, Beverly Park and Spooner Park.

CITY OF CANTERBURY BANKSTOWN COUNCIL
LUCAS CREEK STORMWATER INFRUSTRUCTURE AND RESTORATION

Canterbury Bankstown Council implemented works along the urbanised Lucas Creek to improve safety, aesthetics and reduce the urban heat island effect. Natural sandstone bedrock and recycled sandstone were used to stabilise banks and reduce erosion. Invasive weeds were removed and replaced with 15,000 local native grasses, shrubs and trees. The project was funded by council's Stormwater Levy.

campbelltown city council
GEORGES RIVER COUNCIL
SUTHERLAND SHIRE COUNCIL
LIVERPOOL CITY COUNCIL
CANTERBURY BANKSTOWN
Bayside Council Serving Our Community
Georges River Environmental Education Centre NSW Department of Education
WESTERN SYDNEY UNIVERSITY
Streamwatch
NSW GOVERNMENT Office of Environment & Heritage
FairfieldCity Celebrating diversity
Wollondilly Shire Council
GRCCC Georges River Combined Councils' Committee Inc.