

Waterway Health Report Card **2015-2016**



our waterways

Blacktown City: Creating a water sensitive city



Creek restoration

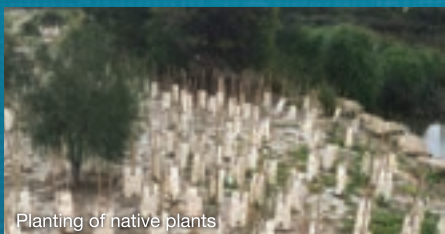
Stormwater has a detrimental impact on our waterways, particularly after it rains. Stormwater washing over our streets ends up in our waterways, and in large quantities stormwater can scour creek banks, removing large deposits of soil and vegetation, making it unfavourable for wildlife and it can look unsightly. We are working to restore and improve the condition of our creeks by ensuring creek bed and banks are stabilised, and native plants are planted so that local creeks look more natural, flooding impacts are reduced and habitat for wildlife is supported.

This year creek restoration works have been completed along Lalor Creek at Troubadour Reserve, Kings Langley.



Stormwater education program

We are working with schools, community groups and residents across our City to increase understanding of stormwater and catchment management, and promote behaviour change so that waterway health is improved. Over 4,014 people have been engaged this year as part of face to face interactions through community events, including guided walks and workshops. We have engaged e-audiences of approximately 50,000 people through online and social media, and have worked with people from 10 different language and cultural groups through bus tours and visits to local wetlands.



Bed and bank stabilisation

Creek bed and bank stabilisation activities use soft engineering techniques such as the planting of native plants and weed removal. These activities help to protect Council's natural assets, improve community safety and improve waterway health for all to enjoy.

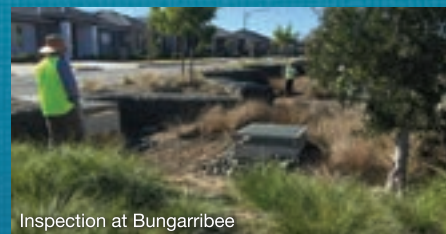
This year bed and bank stabilisation works have been completed at:

- Orana Park, Blacktown
- International Peace Park, Blacktown
- Pied Piper Playground, Seven Hills
- Plumpton Park, Plumpton.



Creek assessments

An assessment of riparian vegetation and creek channel condition has recently been undertaken across the Blacktown area. More than 400 site assessments were conducted along Council's 250 kilometres of waterways, making this the largest survey of creek condition undertaken by Council to date. In conjunction with our water quality sampling, these assessments will assist in effective catchment planning and future waterway management options that will allow for effective catchment planning and prioritisation of future creek remediation projects.



Auditing of privately owned stormwater assets

We proactively audit both stormwater quality improvement devices and on-site stormwater detention systems within the Blacktown Local Government Area. Our compliance program ensures both private and public assets are maintained in good working order to help protect the health of our local rivers and creeks.



Industrial auditing

Having one of the highest concentrations of commercial and industrial businesses in NSW, Blacktown City Council is actively engaging with local businesses under its Environmental Recognition Business Program. The program is designed to educate and inform businesses as to how they can improve practices, and ensure local waterways are protected from industrial and hazardous substances. It also aims to acknowledge businesses that are proactively preventing pollution by storing, handling and managing hazardous substances in accordance with environmental law and best practice. Certificates of Achievement are now being awarded to those businesses who are managing their hazardous substances in accordance with environmental law.



Stormwater harvesting

Council will soon commence stormwater harvesting at the Blacktown International Sportspark, Rooty Hill which will supply 200 million litres of treated stormwater per year. This is equivalent to 80 Olympic sized swimming pools. The water will be used to irrigate playing fields at Blacktown International Sportspark and reserves at Anne Aquilina and Kareela Reserves, Doonside and Charlie Bali Reserve, Rooty Hill. Stormwater harvesting helps restore the natural water balance by utilising increased stormwater runoff generated from hard surfaces such as carparks, roads and rooftops, reducing the amount of stormwater entering our local creeks.



Cleaning a pollution control device.

Litter

We strategically install and maintain pollution control devices in stormwater drainage pipes across the City. These devices capture large amounts of litter and sediment that wash into our stormwater drains on rainy days. There are currently over 300 pollution control devices of various types across our City that capture approximately 800 tonnes of rubbish each year. Without these devices this rubbish would end up in our local creeks.



William Lawson wetland

Wetlands

Wetlands are designed to capture and clean stormwater before it enters our local waterways. Wetlands are a natural system that also provide habitat for birds and aquatic animals, and they look great too. To ensure wetlands look and fulfil their intended function of removing stormwater pollutants and excess nutrients before they enter local waterways, regular maintenance is required. Council undertakes maintenance of its wetlands to include general management of the water body, sediment removal and vegetation management.

This year wetland maintenance was undertaken at:

- Plumpton Park Wetland, Plumpton
- William Lawson Wetland, Prospect
- Metella Reserve, Toongabbie
- Eskdale Street, Minchinbury
- Mitchell Reserve, Blacktown
- Orana Park, Blacktown.

Acknowledgments: Blacktown City Council Waterway Health Report Card was developed by T. Ahmed, C. Tippler and is modelled on the following existing programs: EHMP (2013) Ecosystem Health Monitoring Program 2008-09 Annual Technical Report. South East Queensland Healthy Waterways Partnership, Brisbane. Centre for Environmental Management, Central Queensland University. ©2015-2016 BCC Waterway Health Report Card. Printed on paper manufactured from sustainable resources. Cover photo: South Creek.



On lot raingarden at Rooty Hill

What can I do to preserve our waterways

You can reduce stormwater pollution by stopping it entering the drain in the first place. Here's how:

Home

- Carry shopping in reusable bags. Plastic bags are a common pollutant, they can take a long time to break down and animals can be smothered, tangled or choked in them.
- Put rubbish in the bin. Rubbish takes a long time to break down.
- Use phosphorous-free detergents by looking out for the NP (no phosphorous) sign on packaging.
- Keep paint, turps and solvents clear of gutters and drains, re-use turps once the paint has settled, and allow unused paint to dry out and then put it in the bin or take it to your yearly local chemical cleanout. See Council's website for details.
- Pick up your dog's droppings with a plastic bag and put it in the bin.
- Did you know residents are eligible for 12 free household waste pickups each year. To book a pickup call 9839 6000.
- If you have chemicals you need to dispose of, please contact info@environment.nsw.gov.au or phone the Environment Line 131 555.
- Build a raingarden at home. Raingardens are an attractive, low maintenance and self-watering garden that help to clean stormwater before it enters our waterways. Contact Council on 9839 6000 to find out more details on how they work.

Car

- Use a car wash that recycles water or wash your car on the grass and use as little detergent as you can.
- When cleaning under the car, check for any fluid leaks and get them repaired.

Garden

- Sweep gutters and driveways rather than hose them down.
- Put leaves in the compost or on the garden as mulch.
- Rake up grass clippings then mulch or compost. Composting helps prevent the drains from becoming blocked and causing local flooding.
- Cover piles of soil, sand or mulch to stop them washing away on rainy days.
- Use natural fertiliser only when necessary. Excess nutrients in the water encourage waterweed and algae growth.

Street / park

- Put your cigarette butts and other rubbish in the bin, and pitch in and help clean up littered areas.
- If there is no bin handy, hold onto your rubbish until you find one, and carry a container for your cigarette butts.
- Pick up your dog droppings when you're out and about.
- Report illegal dumping and builders that are not controlling sediments on their building sites by calling Council on 9839 6000.

For more information contact:

Blacktown City Council
Asset Design

Phone: 9839 6000

Email: council@blacktown.nsw.gov.au

www.blacktown.nsw.gov.au/Environment/Water_Catchments

Twitter: @blacktowncc

Facebook: Blacktown City Council

YouTube: Blacktown City Council

State of our waterways

Blacktown City is growing rapidly and by 2036 it will be home to more than 500,000 residents. Much of the growth in population will be due to the transformation of 7,500 ha of rural land into urban development in the northern half of the Blacktown Local Government Area as part of the North West Growth Centre. This urbanisation will accommodate 65,000 new homes and around 200,000¹ people.

The expansion of the City will increase the amount of hard surfaces such as roofs, paths, driveways, roads and car parks. These hard surfaces are mostly impervious which prevent rainwater from absorbing into the ground. These hard surfaces direct large volumes of fast moving ‘stormwater’ into our waterways through the gutters and drainage pipes. This stormwater carries with it pollutants from urban areas which flow into our creeks, rivers and wetlands, degrading the health of our waterways. Due to the urbanised nature of our catchments, water quality improvements in the short term are unlikely to be detected.

Any improvements are only likely to be detected in the long term as a result of considerable investment in works designed to help improve water quality.

In the west of the City lies a small tributary of Little Creek. This creek is in excellent condition and is surrounded by undisturbed bushland which is home to over 300 species of native wildlife and endangered plants.

We periodically monitor the quality of our waterways and the results for the 2015/16 financial year are included in this report card. Overall, most urban waterways within Blacktown City are in fair condition, with several creeks in less developed areas of the City in good condition.

Changes in health grades of our waterways across the 2015/16 monitoring period are due to the significantly below average rainfall period experienced throughout winter and spring of 2015.

Below average rainfall results in dry conditions and less flow in waterways resulting in harsh conditions such as low oxygen, high temperatures and changed chemical conditions. These changes create a decline in the waterbug community, causing the grades in some of our creeks to be lower compared to the previous years. Fluctuations in water quality occur naturally in our environment, however most of the time poor water quality can be related to human influences such as sedimentation from building sites, dumping of chemicals and pollution into the stormwater drains, and runoff from high nutrient areas.

To combat these issues, Blacktown’s Community Vision 2030 states Council’s intent to “pursue best practice sustainable water management to protect and improve the water quality of the local environment”. We are actively undertaking various projects to protect and enhance our waterways in the face of continued urban development.

¹ NSW Department of Planning and Environment n.d, North West Priority Growth Area, accessed 11 August 2016, <http://growthcentres.planning.nsw.gov.au/PriorityGrowthAreas/NorthWestPriorityGrowthArea.aspx>

Ropes Creek - North

2014

C

2015

B

2016

D

In the past year we have seen a decline in water quality and waterbug diversity. This indicates that this creek has been affected by water pollution and resulted in a reduced waterways health grade this year. Weeds continue to dominate the riparian vegetation.

South Creek

2014

B

2015

B

2016

B

The riparian vegetation at this site is dominated by native species and the abundance and diversity of waterbugs has improved. However periods of poor water quality leave this site with the same waterway health as last year.

Little Creek Tributary

2014

A

2015

A

2016

A

An excellent example of a minimally disturbed Western Sydney creek that has healthy riparian vegetation with a good diversity of native species. Good water quality has enabled a diverse and abundant waterbug community that includes species which aren't present in other creeks in Blacktown City due to pollution and poor water quality.

Bells Creek

2014

C

2015

B

2016

C

There was no change in water quality results this year, however, a significant decline in waterbugs richness was recorded, resulting in a reduced waterways health grade. The riparian vegetation at the site is dominated by weeds.

Eastern Creek - North

2014

B

2015

B

2016

B

The diversity and abundance of waterbugs and water quality are consistent with last year. The riparian vegetation includes some native species, with the presence of some invasive weeds.

Breakfast Creek

2014

C

2015

C

2016

C

The waterbugs present in this creek are more tolerant to pollution. A narrow riparian buffer with remnant native vegetation helps to enhance the overall health of the creek. Variable water quality with high nutrient levels leave this site with the same waterway health as last year.

Quakers Hill Creek

2014

C

2015

C

2016

C

The riparian vegetation has patches of native vegetation. However, at present the waterbug community is dominated by species that are tolerant to pollution, which is reflective of fair water quality.

Lalor Creek

2014

D

2015

D

2016

C

Over the past two years Council has undertaken work to rehabilitate Lalor Creek with native vegetation. This work is likely to have influenced and contributed to an improvement in a waterways health grade this year.

Toongabbie Creek

2014

C

2015

C

2016

C

Variable water quality and high nutrient levels in this creek are reflected in the waterbug community, which does not contain any species that are sensitive to pollution. The riparian vegetation community, however, retains some native species, though weeds are prolific.

Blacktown Creek

2014

C

2015

C

2016

B

An improved waterways health grade this year may be influenced by the Mitchell Reserve Wetland which is now well established and is functioning effectively. There has been a significant improvement in the water quality and a richer waterbug community. The presence of a narrow strip of riparian vegetation that contains remnant native vegetation also enhances the overall health of the creek.



Aerial view of Blacktown Local Government Area

Little Creek

2014

D

2015

D

2016

E

Poor water quality results are frequently observed for this creek and the waterbugs present are species that are more tolerant to pollution. Riparian vegetation is weed dominated and provides little in-stream habitat. Although the grade for Little Creek has declined, the result should not be considered significant.

Ropes Creek - South

2014

B

2015

B

2016

B

The diversity and abundance of waterbugs and water quality are consistent with last year. The riparian vegetation is in good condition.

Angus Creek

2014

C

2015

B

2016

C

A lower waterways health grade this year was driven by a decline in macroinvertebrate richness. The waterbug community found at Angus Creek lacks species that are sensitive to pollution, while the riparian vegetation is dominated by weeds which continue to impact on the health of the creek. Historical grades show the condition of this creek fluctuate over time.

Eastern Creek - South

2014

B

2015

C

2016

B

Remnant patches of native vegetation and a significant improvement in the richness of the waterbug community have enhanced the overall condition of the creek.

Bungarrabee Creek

2014

B

2015

B

2016

C

A decline in the waterways health grade is a result of a decline in water quality, which is reflected by the absence of pollution sensitive waterbug species. However, the riparian vegetation community retains a good coverage of native species which helps to enhance the health of the creek.

Greystanes Creek

2014

C

2015

C

2016

D

There is a decline in water quality and a reduction in the richness of the waterbug community. The absence of native riparian vegetation contributes and reflects a poor waterways health grade this year.

Waterway health

What do we monitor and why?

The health of a waterway is measured using a variety of methods. The report card scores rely on three key indicators to assess the condition of Blacktown City's creeks which include:

- Water quality (physical and chemical factors)
- Waterbugs (macroinvertebrates)
- Creek bank (riparian) vegetation.

Water quality

Water quality is an important factor associated with aquatic ecosystem health. We regularly monitor water quality in many waterways throughout our local area. We measure pH, salinity, nutrients and turbidity.

Waterbugs

Waterbugs, or aquatic macroinvertebrates, form an important part of the aquatic ecosystem, and are widely used as indicators of waterway health. Certain waterbugs are more tolerant to water pollution and environmental change than others, so by monitoring the waterbug communities we gain more of a snapshot of current waterway health.

Riparian vegetation

Native riparian vegetation along creek banks is beneficial to maintaining water quality, bank stability and regulating water temperature. It also provides important habitat and a major role in the food chain of creek ecosystems.

Grading system

- A

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Excellent: Water quality indicators are within guideline limits more than 90% of the time. Diverse waterbug community with species sensitive to pollution present. Good riparian vegetation with native plant diversity and coverage.
- B

.....

Good: Water quality indicators are within guideline limits 85% of the time. Moderately diverse waterbug community with some pollution sensitive species not present. Riparian vegetation has moderate native diversity and coverage, with some weed infestation.
- C

.....

Fair: Water quality indicators are within guideline limits 70% of the time. Waterbug community only contains pollution tolerant species. Riparian vegetation is lacking native diversity and coverage, and weeds are likely to be present and possibly dominating.
- D

E

F

....

Poor: Water quality indicators are within guideline limits less than 50% of the time. Waterbug community only contains pollution tolerant species. Riparian vegetation is lacking native plant diversity, and weeds are most likely to be dominating.