

Our Waterway Health

2021/22

Our Waterways

The Nepean River and South Creek are two iconic waterways that support wildlife, recreation, green spaces, urban areas and the economy in Camden. Both waterways and their catchments drain to the Hawkesbury River, over 40 kilometres away.

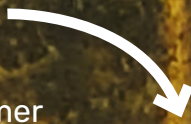
The transformation of rural land into urban areas with hard surfaces (roofs, footpaths, driveways and roads) means less rainwater is absorbed into the ground. During rain events, the increased volume of fast-moving urban runoff (stormwater) collects pollutants and carries these into stormwater drains and eventually our local waterways.

Our creeks and rivers are under stress due to pollutants (litter, fertilisers, and sediment), sewer overflows, introduced species, and increased flows.

As stormwater is collected separately to sewage and not usually treated before entering waterways, it is important to keep these pollutants out of our stormwater drains.

This is a Freshwater Herring, and the small fish above are Australian Smelt.

Fun fact: Over 40% of their diet in summer can come from insects falling off overhanging vegetation.



Council acknowledges the Dharawal people as the traditional custodians of this land and pay our respects to their Elders past, present and emerging.



Aerial image of biofiltration basin and water play space at Dawson-Damer Reserve, highlighting the importance of blending water sensitive urban design with the urban landscape.

Projects in the flow

Council is committed to protecting our natural environment by improving the health of our waterways. We are working towards this through a variety of on-ground projects, data collection, asset maintenance and management, and education.



Narellan Creek improvement at Eskdale Reserve

The improvement works at Eskdale Reserve, Mount Annan were completed on schedule in early March 2022.

The works included removal of litter, accumulated sediment, and weeds. The creek channel was realigned, new native trees and plants added, and the adjacent pathway fitted with solar lighting. A low height fence was also installed to prevent windblown and dumped litter entering the pond and creek.

These improvement works are expected to help improve the water quality of Narellan Creek. To ensure this, a maintenance plan for the area was developed and continues to be implemented.

Nepean River, Our River

Council developed and published the 'Nepean River, Our River' video series in partnership with Penrith City Council.

This video series explores the history and use of the Nepean River, what both Councils are doing to improve water quality and how you too can help limit your impact on our waterways.

The videos can be viewed on Council's YouTube Channel or [website](#), and cover the topics of healthy waterways, water quality monitoring and water sensitive urban design (WSUD).



Waterway Walks

A third Waterway Walk has been created for Narellan Creek, Mount Annan. The walk takes you on a tour of Lake Yandel'ora and Annan Lake and explores the natural and constructed features that keep Narellan Creek clean and healthy.

There are also Waterway Walks at Kolombo Creek, Oran Park and Narellan Creek, Harrington Park.

All three Waterway Walk guides and Bingo cards can be downloaded off the Camden Council [website](#).

Erosion and sediment control

Erosion and sediment controls are essential measures to help prevent sediment and debris from leaving development sites and entering streets, drains and our local waterways.

Council undertakes both proactive and reactive site inspections to help protect our waterways from sediment and litter.

During 2021/2022, Council carried out inspections of the sediment and erosion controls at over 700 building sites within the Camden Local Government Area (LGA).

Over 400 formal warnings were issued for improvements to building site controls.



Aquatic weed control

Aquatic weeds have the ability to cover waterbodies, suffocate native vegetation and negatively impact water quality. Council manages aquatic weeds, including Alligator Weed, Frogbit and Kidney-leaf Mud Plantain, throughout the local government area and also works with neighbouring councils to protect the Nepean River and other waterways.



Frogbit
(*Limnobium laevigatum*)



Kidney-leaf Mud Plantain
(*Heteranthera reniformis*)

A relatively new aquatic weed called Frogbit (*Limnobium laevigatum*), has been identified in the Camden LGA.

It can rapidly invade and smother waterways, making it a serious biosecurity threat to lakes, creeks, dams, the Nepean River and other waterways.

Plants can form into large mats of runners and adult plants can develop very quickly. A common cause of spread is the dumping of illegal aquarium or pond plants in waterways.

To report a sighting of Frogbit, contact Council.



Platypus monitoring

Results from environmental DNA (eDNA) sampling in September 2021 detected the presence of platypus in the northern sections of the Nepean River, downstream of the suburb of Camden.

Sampling in 2022 was unable to be conducted due to the condition of the Nepean River after multiple flooding events. Resampling is planned for February 2023 and will include some of the smaller tributaries of the river to gain further understanding of platypus habitat, range and population dynamics.

Did you know closed-top yabby traps, including opera house and Kulkynne pyramid style traps, are banned in all inland waters in NSW? This helps prevent death of aquatic air-breathing animals, including the platypus, turtles, water birds and rakali.

Portable Water Stations for hire

Council is committed to supporting the community and protecting the local environment.

You can hire these portable water stations for free and help provide a zero-cost and healthy hydration option at your event. You'll also help protect our waterways by reducing single use plastics!

The portable water stations are designed for outdoor use within the Camden Local Government Area and can be booked for hire through Council's [website](#).



Bushcare volunteering

Bushcare is a great way for the local community to work with Council to make a difference to the local environment. With seven Bushcare groups working in the Camden LGA, it's easy to get involved and make a difference to our local environment.

Bushcare volunteers can participate in:

- Weed control;
- Revegetation;
- Bushland, river and creek restoration;
- Seed collection; and
- Training and workshops.

Check out Camden's [website](#) for more information.

Asset management

In the Camden Local Government Area, there are 75 detention basins and over 428 water quality devices, like gross pollutant traps (GPTs), which function to maintain and improve the quality of stormwater entering our waterways. More than 324 of these assets are specifically designed to remove litter from our waterways.

2020/21		2021/22
55 detention basins	→	75 detention basins
406 water quality devices	→	428 water quality devices
295 GPTs	→	324 GPTs





Connecting Camden White Gum

Council received funding for the 'Connecting Camden White Gum' project under the NSW State Government's Greening our City Program in 2021. The project was developed in collaboration with the CSIRO Australian Tree Seed Centre (CSIRO) which saw the installation of 500 of the Nationally Threatened tree species, Camden White Gum (*Eucalyptus benthamii*).

Take a visit to Elizabeth Macarthur Reserve, Camden South, to see the increased abundance of Camden White Gums, the increased links between fragmented riparian vegetation, and the increased tree canopy cover keeping the area cool.

Canopy Enhancement – Ferguson's Land

Another NSW State Government Greening our City funded project is underway at Ferguson's Land. This project enhanced the original landscape plan for the Ferguson's Land Cricket Facility and saw the restoration of a section of riparian vegetation through weed removal and revegetation.

Woody weed species were removed and replaced with over 2,000 native plants, including 50 Camden White Gums.



ONGOING INITIATIVES

- Council's water quality monitoring program and water quality sensors will continue to monitor the health of Camden's waterways. The program is designed to be dynamic and adaptive so additional sites and parameters can be monitored for, as places and technology develop.
- Council regularly monitors the Nepean River and urban lakes for toxic blue-green algae which can be damaging to humans, domestic animals and livestock that come in contact with water. When required, Council undertakes notification of dangerous blooms of blue-green algae through warning signs, letters and website updates. You can check current alerts at any time by visiting Council's [website](#).
- Council's Natural Areas Team spend thousands of hours each year maintaining local creeks and waterways by undertaking weeding, planting of riparian corridors and litter removal. To support these efforts, administration Council staff volunteer their lunch breaks each month to help restore the Kolombo Creek riparian area. You too can be involved in [Bushcare](#) and reap the benefits of being in your natural area, connecting with neighbours and learning about our wonderful native species.
- Australian White Ibis are protected native birds that have become more common in urban environments due to habitat loss. High population numbers can impact the local environment and the surrounding community. At Annan Lake, Mount Annan, Council actively manages the population of Australian White Ibis through the adopted [Management Plan](#).
- The floating wetland rafts at Harrington Park Wetlands and Annan Lake continue to help remove nutrients, sediment, heavy metals and some hydrocarbons from stormwater. The native wetland plants on the rafts also provide habitat to aquatic wildlife and birds.



Monitoring the water quality of the Nepean River using probes to test the physical parameters.

Projects in the creekline

Council is actively working to improve our waterways and associated stormwater drainage systems. These progressing projects will deliver more on-ground projects, data collection, asset maintenance and management, and education.



Camden has 26 kilometres of open drainage channels and over 756 kilometres of stormwater pipes that drain into the South Creek and Nepean River catchments.

That's more than the distance from Sydney to Melbourne!

Water Sensitive Urban Design (WSUD) Operational Guidelines

To better understand stormwater treatment measures and provide clarity for Council and the community on how these should be maintained, Council is developing Water Sensitive Urban Design (WSUD) Operational Guidelines.

This document identifies the twelve main types of stormwater treatment assets and helps our teams responsible for Councils parks, street sweeping and reserves.

If you have a rainwater tank or other stormwater asset, this document will also help guide you on how to best operate it.

The document will be available for use in 2023.



Gross Pollutant Trap (GPT) auditing

Camden has over 324 assets specifically designed to remove litter from our waterways. This is 29 more than last year.

Council is auditing these gross pollutant traps to better understand them, determine how much litter they stop from washing downstream, and what improvements can be made to get the best out of them.

By June 2022, we had audited 147 of these, with the remainder to be completed in 2023.

Nepean River Bass habitat at Spring Farm

Council accepted \$40,000 in funding from the Department of Primary Industries (DPI).

Council will use this funding to install fish habitat structures and erosion control in the Nepean River at Spring Farm to promote an increase in population and passage of Australian Bass.

Funding for this project was provided by NSW DPI's Fisheries' Recreational Fishing Trust's "Habitat Action Grant Program" and aims to address the desire to fish on the Nepean River.

The Spring Farm and fishing community also have the opportunity to get involved by volunteering to plant native species at the project site. The project will be completed by November 2023.



Greener Places, Healthier Waterways

Council's draft Greener Places, Healthier Waterways Vision outlines an aspirational goal to create greener places and healthier waterways across Camden.

It recognises the 'Green Grid' is related to the 'Blue Grid' and that management of them together provides clear benefits to both.

The draft Vision will be reported to Council for consideration in early 2023.

Nepean River bank stabilisation at Ferguson Land

Flooding has the potential to significantly impact river systems, often through native vegetation being lost and bank erosion, which contributes a high nutrient load into waterways.

Sydney Water, in partnership with Council, is undertaking bank stabilisation works on the Nepean River at Ferguson Land. These works will include removal of woody weeds, regrading of the bank, installation of large woody debris structures, and replanting with local native vegetation.

The NSW Government Soil Conservation Service has designed and will lead the construction of these works. The project is expected to be completed by the end of 2023.



LiDAR measurements on the site show that over 6,770m³ of sediment was lost between 1 December 2021 and 16 May 2022. That equates to well over 2 Olympic sized swimming pools of sediment.



Eastern dwarf tree frog (*Litoria fallax*) by Ashleigh Tamayo (winner of the 2022 Macarthur Nature Photography Competition - Australian Animals, High School category).

STAY TUNED

- Sustainable Living Workshops are held each year covering a range of sustainability topics, chosen by you! Some water related topics include rainwater harvesting, maintaining your rainwater tank, and FrogID. There are plenty of other topics we've covered including how to keep your home cool in summer, veggie gardening, and how to build/renovate for thermal comfort and energy efficiency. To stay updated on the Workshop series and latest offerings, subscribe to the Sustainable Camden eNewsletter.
- Loving your local Waterway Walk? Keep your eyes peeled for a Waterway Walk along the iconic Nepean River! This Waterway Walk will be delivered as part of Council's Nepean River Bank Restoration Project and will be celebrated by a World Rivers Day 2023 event.

Want to stay updated on Council's environmental initiatives? Subscribe to the Sustainable Camden eNewsletter on Council's website today.



Auditing of Council's Gross Pollutant Trap (GPT) assets to determine their condition and whether they are operating at their best capacity to keep litter out of our waterways.

Projects in the pipeline

Some of Council's projects are in their initial stages and are being developed into high quality projects. These projects will deliver water quality improvements and increased amenity to the Camden community.



Council's Narellan Creek Waterway Walk in Harrington Park is a 3 kilometre loop that takes you around Harrington Park Lake. Along the way, you can learn about the natural and constructed features that help keep our creeks and rivers healthy.

Narellan Creek Water Quality Improvement Project

Through a Deed of Agreement with Sydney Water, Council has received \$200,000 to undertake works to improve the water quality and amenity of the Narellan Creek Water Quality Management System.

The key existing water quality feature in the Narellan Creek catchment is the Harrington Park Lake system, which was built in the late 1990's. Additional lake systems were constructed in the early 2000's which completed the Narellan Creek Water Quality Management System.

The Narellan Creek catchment will be investigated and assessed to provide prioritised management actions for Council. Once this independent report is complete, Council will undertake improvement works in the Narellan Creek catchment, with some projects expected to be completed by December 2023.

NSW Public Spaces Legacy Program

The NSW Public Spaces Legacy Program seeks to protect the health of the community and deliver a legacy of safe, quality public and open space.

Partly funded by Camden Council, the project encourages exploration of the interconnected experiences linking Camden Town Centre to the Nepean River.

The project will deliver an almost 4.3 km extension to the current recreational pathway network in Camden and link with high quality features and facilities. It will also encourage connection and appreciation of the Nepean River and Camden Town Farm.

Completing the missing links of the planned Camden Town Centre Urban Design Framework and Camden's Metropolitan Green Grid Network, the project is aimed for completion by 2024.



Did you know?

The flooding that occurred in 2022, broke the record for highest stream water level on the Nepean River at the Camden Weir.

Flooding is a natural process of any river system, and while it can have significant economic, social and environmental impacts it also provides many benefits to the local environment and surrounding floodplain.

Nepean River Bank Restoration Project




The banks of the Nepean River have been significantly impacted by flooding in March, April and July 2022, as well as in March 2021 and February 2020. These eroding banks are encroaching on some public assets, such as the Nepean River Cycleway and Rotary Cowpasture Reserve.

With funding from the NSW Environmental Trust Restoration and Rehabilitation grant program, Council will be stabilising sections of the riverbank. This will include restoration of the Critically Endangered Ecological Community, River-flat Eucalypt Forest, through woody weed control, and revegetation with native species, including the Nationally Threatened species Camden White Gum (*Eucalyptus benthamii*).

As the Nepean River supports a wide diversity of plants, animals, threatened ecological communities and threatened plant species, it is a key biodiversity corridor in the Camden LGA.

The project will also have a community engagement program and an event to celebrate World Rivers Day 2023.

LEGEND

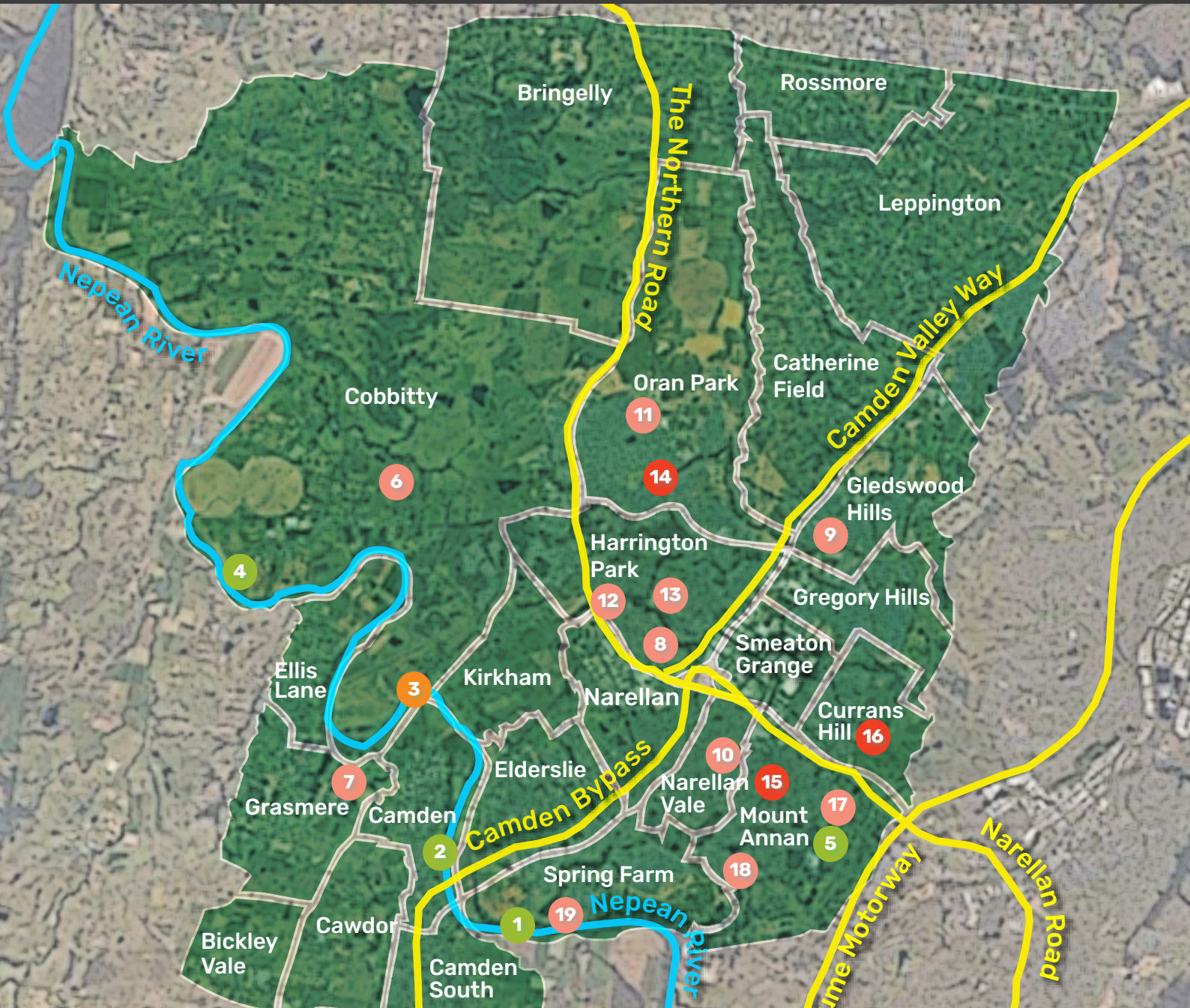
-  Waterway
-  Major road
-  Monitoring site

What does an A (excellent) grade waterway look like?

A waterway in excellent condition is within water quality guidelines almost all the time, has a rich and dense native vegetated riparian corridor and hosts pollution sensitive water bugs. Often these waterways are not impacted by stormwater, modified land use or urban development and are found in pristine environments, like national parks.

With the impacts of recent flooding and increasing urban development, it is important to protect our waterways by limiting our impact on stormwater quality.

Council generally advises against primary contact (e.g. swimming) with water from our waterways due to water quality variability from the surrounding urban environment.

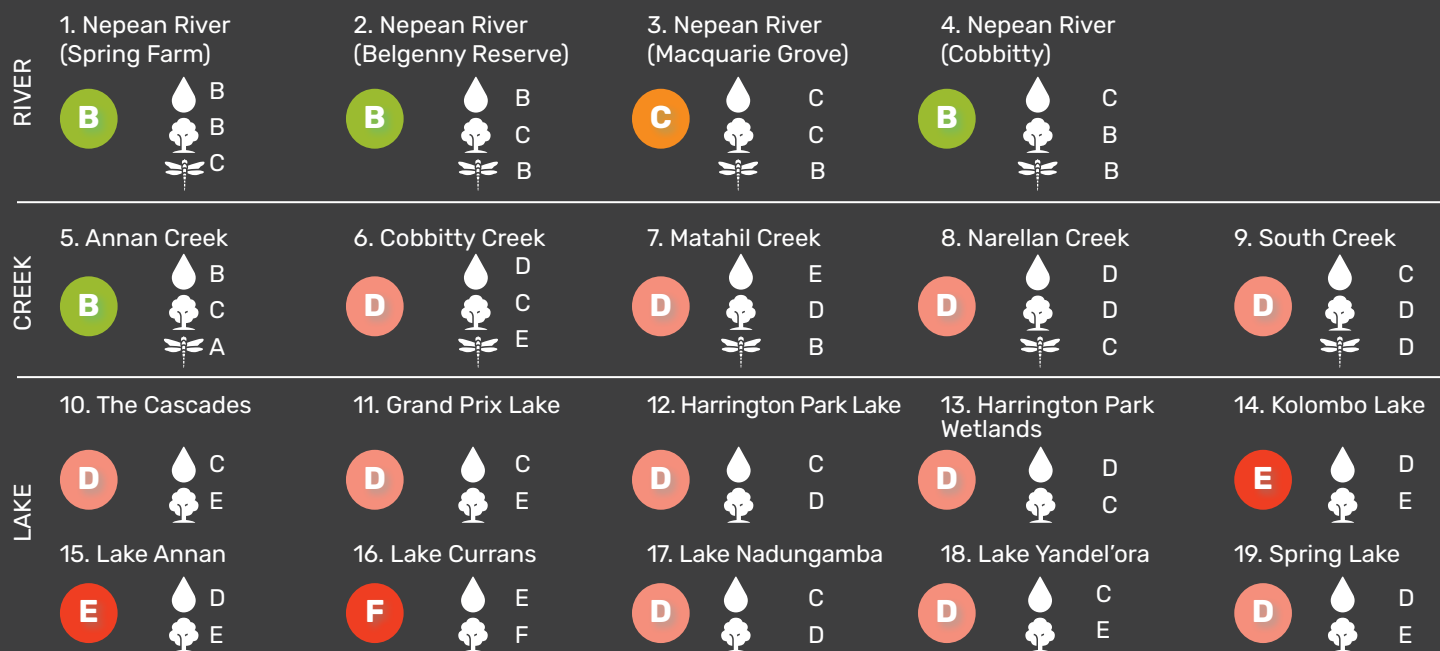


Why have the grades changed from last year?

2022 was the wettest year on record for Greater Sydney since records began in 1858, according to the Bureau of Meteorology. This resulted in multiple and prolonged flood events that deteriorated the condition of our waterways through damage to riparian vegetation, severe bank erosion, increased turbidity and excess nutrients in our waterways. This is especially apparent on waterways that directly receive stormwater from surrounding urban catchments.

The impacts of stormwater on our waterways can be quite visual, as seen through the loss of riparian vegetation and bank erosion by the force and quantity of stormwater or the presence of litter washing into our waterways. However, there are also less visible impacts of stormwater that can reduce water quality, including hydrocarbons washed off roads, or nutrients and fertilisers that come off gardens.

By working with our community and regional partners, the Council projects listed above will help improve the quality of stormwater entering waterways.



Waterway health grades

The waterway health grades are an average of these parameters:

Water quality

This grading is based on the physical, chemical and microbiological characteristics of the water in our waterways such as nutrients, pH, salinity, turbidity, dissolved oxygen and bacteria.

Riparian health

A healthy riparian area is important to waterway health as it provides shade and bank stability, as well as habitat for land and aquatic animals. The riparian health grading is a measure of the level of disturbance and the habitat potential of the riparian area.

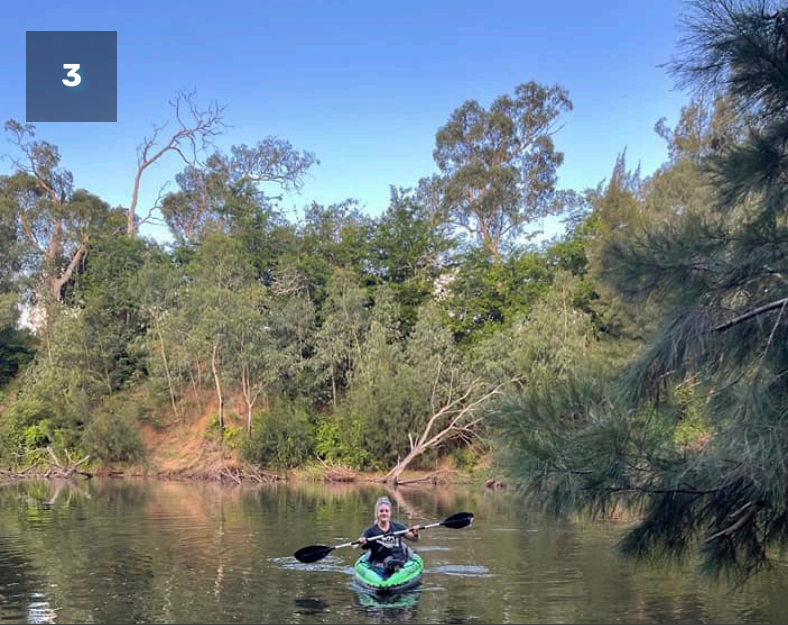
Water bugs

Water bugs (or aquatic macroinvertebrates) are the small creatures that live in our waterways. The amount and type of water bugs can tell us how healthy a waterway is. This is only measured at the river and creek sites.

A	Excellent	A waterway in excellent condition has water quality parameters within guidelines almost all of the time. The riparian area is rich and dense in native vegetation and pollution sensitive water bugs are present.
B	Good	A waterway in good condition has water quality parameters within guidelines most of the time. The riparian area has native vegetation with scattered weed growth and some pollution sensitive water bugs are absent.
C	Fair	A waterway in fair condition has water quality parameters within guidelines some of the time. The riparian area lacks native vegetation and likely has weeds and turfed areas. The water bugs present are pollution tolerant.
D	Poor	A waterway in poor condition has water quality parameters within guidelines half of the time. The riparian area lacks native vegetation, likely has weeds and turfed areas and is close to urban areas. The water bugs lack diversity and are pollution tolerant.
E, F	Degraded	A waterway in a degraded condition has water quality parameters outside guidelines most of the time. The riparian area is heavily degraded with weed species, turf and urban areas and the limited water bugs are pollution tolerant.

World Rivers Day 2022

To celebrate our waterways and World Rivers Day 2022, we asked you to submit a photo, experience or story that recognises and cherishes your local waterway. Here are some of the best photos and words of appreciation we received.



1: Sunset over Springs Lake, Spring Farm. (Ian Ramsay)

2: What better place to be than a friendly visit to the dog enclosure before a picnic by Springs Lake. (Gracie D-Giorgio)

3: Leisurely kayaks in the Nepean River. This picture was taken before this year's flooding. Now kayaking down it you can see how much the river course changes, the banks widen, and trees go missing. How overtime it is constantly changing but forever will be a relaxing place to enjoy a paddle. (Tiarne White)

4: My wife and I are new to kayaking and are slowly discovering all the beautiful places to go. One of our first amazing discoveries was the Nepean River. The Nepean River is amazing, and it gives you an amazing view from such a different perspective. One day we made our way to Camden weir. The feeling as if you were on the edge of the world was amazing. (Jessica Emily Jenkins)

(No image): Learned to swim in the river. Little Sandy was our beach. Fishing from the bridge mostly eels! Dad would skin them, and Mum boiled them up on the old fuel stove. Us kids never ate them! (Kez Wheat)



We can all help improve local water quality by making small changes in our everyday lives that protect our beautiful waterways. Take the Be the Solution to Stormwater Pollution pledge and commit to five changes that make a positive impact on stormwater quality.

Garden	Home	Neighbourhood
<ul style="list-style-type: none"> Sweep up leaves and grass clippings and place in the green bin or compost; 	<ul style="list-style-type: none">  Refuse and reduce single use items; 	<ul style="list-style-type: none">  Report illegal dumping and building sites without sediment controls to Council;
<ul style="list-style-type: none"> Limit fertiliser and pesticide use; 	<ul style="list-style-type: none">  Put rubbish in the bin; 	<ul style="list-style-type: none">  Don't be a tosser and put rubbish in the bin;
<ul style="list-style-type: none"> Wash your car on the lawn or at a designated car wash station; 	<ul style="list-style-type: none">  Safely dispose of household chemicals; and 	<ul style="list-style-type: none">  Be a responsible pet owner and pick up after your dog;
<ul style="list-style-type: none"> Keep your soil, sediment and mulch on site; 	<ul style="list-style-type: none">  Install a rainwater tank. 	<ul style="list-style-type: none">  Carefully dispose of fishing lines and hooks; and
<ul style="list-style-type: none"> Plant native plants and retain trees and other vegetation; and 		<ul style="list-style-type: none">  Don't feed the wildlife.
<ul style="list-style-type: none"> Minimise the amount of hard surfaces such as pavers and concrete. 		



BE THE SOLUTION TO STORMWATER POLLUTION




WILL YOU BE PART OF THE SOLUTION?



Scan me!

To take the Pledge, scan the QR code or go to camden.nsw.gov.au and search 'Be the Solution to Stormwater Pollution'.



For further information contact :  Camden Council, 70 Central Avenue, Oran Park, NSW 2570  4654 7777  mail@camden.nsw.gov.au

On cover, Eastern Long-Necked Turtle relocated off busy road by Camden Council staff.