

PART SEVEN

STATE OF THE ENVIRONMENT REPORT 2018-21



Acknowledgement of country

We acknowledge the traditional custodians of the land on which we work and live, the Gathang-speaking people and pay our respects to all Aboriginal and Torres Strait Islander people who now reside in the MidCoast Council area. We extend our respect to elders past and present, and to all future cultural-knowledge holders.

Photo credits

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1 Introduction

We know that protecting, using and enjoying our natural environment is important to the people of the MidCoast region. This was made clear in the vision articulated in the Community Strategic Plan (CSP) 2030:

“We strive to be recognised as a place of unique environmental and cultural significance.”

The environment is a core value in the CSP, which states:

“We value our environment: Our natural environment is protected and enhanced, while we maintain our growing urban centres and manage our resources wisely.”

In order to meet the community’s aspirations, MidCoast Council set a road map for where we wanted to be by 2030 (goals), how we would get there (activities) and who could help (stakeholders). We chose three goals:

- We protect, maintain and restore our natural environment
- We manage resources wisely
- We balance the needs of our natural and built environments

This State of the Environment Report (SOE) provides a summary of our progress towards these goals, looking after the natural assets we love and depend on. The time frame covered in this report is 1 July 2018 to 30 June 2021.

The reporting period was a challenging time for the environment and our community. We experienced the worst drought on instrumental record in 2019. Then came bushfires that burnt 209,549 hectares of vegetation and killed our precious wildlife. In March 2021 major flooding to the Manning River resulted in widespread bank erosion. Much of Council’s efforts have involved working with our partner agencies and the community to remediate the impacts of these natural disasters.



Our natural assets

The MidCoast region covers 10,052 square kilometres from the rugged mountains to the spectacular coast which spans an impressive 192 kilometres. The region includes 58 National Parks and Nature Reserves which provide habitat for our rare and unique flora and fauna. We are known for our expansive waterways including the Manning River and the Great Lakes. Some of our richest natural assets include:

- World Heritage listed Gondwana Rainforests of Australia in Barrington Tops National Park
- Internationally recognised Ramsar Wetlands in the Myall Lakes National Park
- Port Stephens Great Lakes Marine Park
- The state's most important nesting site for the endangered little tern located on the Manning River entrance sand shoals at Farquhar Inlet and Harrington
- A site of international importance for migratory shorebirds – the Port Stephens estuary and its population of the eastern curlew
- Areas of Regional Koala Significance (ARKS) including Kiwarrak-Khappinghat and Crowdy Bay
- Wallis Lake supports the largest area of seagrass in any estuary in NSW, comprising 35% of the State's total area of seagrass, as well as unique sponge communities and a breeding colony of pelicans

Protecting and celebrating these features is a key focus for Council and contributes to our community's lifestyle and wellbeing.

How a healthy environment benefits our community

Our region's natural assets provide a range of ecosystem services that benefit our community. Ecosystem services are the direct and indirect contributions of ecosystems to human wellbeing.

Ecosystem services include the provision of clean water, the production of oxygen, the sequestration of carbon dioxide, building soils and cycling of nutrients. A biodiverse environment helps control pests and break down pollutants.

Council supplies potable water to 37,000 households. The Barrington, Manning, Crawford and Karuah Rivers and groundwater aquifers in Nahiack and Tea Gardens are all critical freshwater supplies for our community.

A healthy environment contributes to ecological resilience – it better enables the environment to recover from disasters such as drought or flood and helps to maintain a stable climate.



Taking a strategic approach

The SOE reporting period from July 2018 to June 2021 saw Council prepare a strategic platform to support the cohesive management of our natural environment and resources. This effort culminated in adoption of a suite of strategic documents towards the completion of Council's term.

The green light was given to the region's first Biodiversity Framework, a roadmap that outlines a consolidated approach to conserving our natural heritage, along with the Manning River Estuary and Catchment Management Program (Manning River ECMP), and the Greening Strategy. Approval was also given to proceed with a region-wide Vegetation Management Policy, along with the adoption of a Flying-fox Camp Management Plan. MidCoast Council's Climate Change Policy was adopted earlier in 2021. All programs draw on the input of a diverse range of stakeholders and community members from across the region.

While each program has its own goals, objectives and outcomes, as a suite of documents they provide a solid foundation for implementing an on-going series of initiatives, in conjunction with community groups, landholders and other government agencies, to protect our environment.

Council now has the tools in place to protect and manage our unique natural environment for future generations, and to enhance the liveability of our towns and villages that the MidCoast is renowned for.



2 We protect and restore our natural environment

Protecting and restoring our natural environment is a core role of Council. Funded by the environmental rate, Council's Natural Systems team leads a range of projects to manage natural assets for their ecosystem services and social and economic benefits.

Our activities

MidCoast Council raises an environmental rate which is used for projects to protect and restore our natural environment. These funds are not sufficient to address the entire range of environmental issues faced by our region, which covers an area of 10,052 square kilometres. To get the best from the environmental rate Council leverages these funds to attract co-investment, usually from state and federal grant programs. Council also charges a Stormwater Levy for projects that address local flooding and improve stormwater quality across the whole MidCoast region.

This section describes some of the key project activities funded by the environmental rate, Stormwater Levy and grants to look after our coast, estuaries, waterways and bushland.

Management of Council's natural area reserves

MidCoast Council is responsible for the management of a large and diverse range of natural areas including over 5,000 hectares of public reserves. These reserves provide an array of ecosystem services and contain large assemblages of flora and fauna species, including threatened species and endangered ecological communities.

Over the last three years MidCoast Council, with the assistance of government funding and specialised bush regeneration contractors, has been working hard to protect and restore the natural values and ecosystem functions of over 70 reserves to build their resilience. Works have included:

- Primary, secondary and tertiary weeding
- Management of feral pest animals
- Flora and fauna surveys
- Threatened species management
- Planting of native species
- Litter and debris management
- Installation of nesting boxes
- Inter-agency collaboration
- Landcare support

These works help to improve the condition of native vegetation across sensitive landscapes, increase habitat for native wildlife and aid in the recovery of these important ecosystems.

Due to the extensive number and size of the natural assets under its care and control, Council is currently auditing the value and condition of all public reserves to help develop and prioritise management actions and the future allocation of funding and resources.



Cattai Wetlands is Council's premier environmental visitation centre that is home to a diverse range of bird species including the threatened comb-crested jacana, black bittern and black-necked stork, native fauna such as kangaroos, wallabies and goannas, an abundance of plant species, and the endangered giant dragonfly.

The reclaimed wetlands site is a growing tourist attraction including an international bird-watching hotspot, drawing an average of 6,000 visitors each year.

In 2019 Council had to close the wetlands for a period of 12 months after sustaining significant damage during the bushfires.

Over 200m of timber boardwalk was lost, which has since been rebuilt, together with the replacement of several interpretive signs. Extensive areas of the wetland and surrounding vegetation were also burnt which resulted in damage to many trees along the walking tracks, posing a risk to public safety.

Prior to the bushfires Cattai Wetlands was already suffering greatly from the effects of one of the worst droughts on record which left the wetlands and Cooperbrook Creek completely dry. The compounding impacts of the fire together with the lowering of the groundwater table also resulted in some of the highest acidity levels recorded for some time following the flood event in March this year.

However, Cattai Wetlands is showing good signs of recovery with paperbarks re-sprouting and the wetlands once again full of water providing a wonderland for hundreds of waterbirds including black swans and their cygnets. Koalas, which had not been seen for many years, have also made a return to the wetlands.

Staff have also been making intensive efforts to control environmental weeds which flourished after the bushfires with funding provided through the NSW Coastal and Estuary Grants Program - Bushfire Affected Coastal Waterways and Council's Environmental Rate.



MidCoast Council, NSW Department of Primary Industries (DPI) and Hunter Local Land Services (HLLS) have been working together to deliver a control program for feral Sambar Deer within the Cattai Wetlands and Big Swamp public reserves.

The *Hunter Regional Pest Animal Control Plan* has identified the feral population of Sambar Deer in the Cattai and Big Swamp area as a regional priority for control. This is because they represent a major risk to users of the Pacific Highway and Harrington Road from vehicle strike incidents, and the wetland's visitors. Sambar are the largest deer species in Australia. They cause a range of environmental impacts such as damage to vegetation and soil disturbance and are potential carriers of livestock diseases.

To date the program, which commenced in November 2018, has resulted in the eradication of over 40 deer by a professional contractor utilising various forms of ground and aerial shooting. While 35 motion sensor cameras have been deployed across the site to monitor the success of the program, observed environmental deer impacts (notably antler rubbing on native trees) have reduced considerably since the inception of the control program.

The program will continue for at least another 12 months and is being funded by the DPI with significant in-kind support provided by Council in the form of staff time.

Flying-fox Camp Management Plan

In 2021, with funding assistance provided by the NSW Department of Planning, Industry and Environment and in consultation with the community, Council prepared a Flying-fox Camp Management Plan to guide the future management of flying-fox camps within the MidCoast region.

There are 18 known flying-fox camps across the region and while the plan considers the issue around all camps, the following five camps were the focus of the plan as they are all located on Council owned land and adjacent to residential areas:

- Karloo Street Reserve, Forster
- Cocos Crescent Reserve, Forster
- Pacific Palms
- Smiths Lake
- Hawks Nest

The Karloo Street and Cocos Crescent Reserves are home to the second largest flying-fox population in the MidCoast region (the largest is at Wingham Brush managed by NPWS). While camp numbers are usually below 10,000, several influxes have occurred over the years, the largest being 125,000 recorded in 2013, and it is these influxes that cause the most community concern.

The camp management plan will guide flying-fox management at each camp which aims to alleviate the impacts of the camps on neighbouring residents in a manner that does not detract from the ecological needs and welfare of the flying-fox, which is a State and Federal listed threatened species. The plan will also help Council obtain approvals for on-ground works and apply for state and federal funding.

Ultimately, we want to reduce the impacts the camps have on the local community by providing support programs for neighbouring residents. We understand that living near a camp can be difficult at times, but we're committed to helping everyone co-exist and ensure these protected species are safeguarded into the future.



Bushfire recovery – koalas

The MidCoast koala population is still recuperating from the devastating bushfires of 2019, but a Bushfire Recovery for Wildlife and Habitat Community Grant from the Federal Government was a huge boost for their recovery process.

The bushfires burnt 209,549 hectares (20.5%) of the MidCoast Council region, which had a devastating impact on local koalas. Council has been working with a range of local groups and agencies to help koalas recover, including Koalas in Care, MidCoast2Tops Landcare Connection, Taree Indigenous Development and Employment (TIDE) and the Tinonee Public School. The \$130,000 grant will further support this work through the implementation of a range of actions to help rebuild and strengthen local communities and koala populations.

The funds will be distributed across five focus areas including the implementation of a koala and community road safety program at Tinonee to address koala blackspots; working with TIDE to plant koala food trees on public land including Cattai Wetlands; undertaking koala connectivity modelling and evaluating revegetation scenarios in the Kiwarrak Area of Regional Koala Significance (ARKS); strengthening koala refuges and movement corridors; and assisting bushfire affected landowners to re-establish koala habitat on their own properties. The project is due for completion in March 2022.



Bushfire recovery - rainforests

In 2021 Council was successful in obtaining \$150,000 in funding through the Australian Government's Bushfire Recovery for Wildlife and Habitat Community Grants Program to undertake restoration works within Federally endangered rainforest areas affected by the 2019 bushfires in the MidCoast region.

The project aims to protect fire affected areas and unburnt refugia of *Lowland Rainforest of Subtropical Australia* and *Littoral Rainforest and Coastal Vine Thickets of Eastern Australia*. These two vegetation types are listed as critically endangered Threatened Ecological Communities. The project will also assist in the recovery of several threatened species associated with the rainforests including the grey-headed flying-fox, magenta lilly pilly, white-flowered wax plant and the spotted-tailed quoll.

Strong partnerships between Council, National Parks and Wildlife Service (NPWS), TIDE and Coastcare will be critical to the successful delivery of this project. These partners will work co-operatively to restore rainforest at seven key locations including Harrington, Lansdowne, Wingham Brush, Black Head, Cape Hawke, Pacific Palms and Anthony's Brush covering an area of 141 hectares that involves various land tenure such as Council managed reserves, privately owned land and parts of the National Park estate.

The project will focus on treating and reducing the density and impact of weeds that threaten the rainforests including declared Weeds of National Significance (WoNS) and transformer weeds such as asparagus fern, bitou bush, madeira vine and cats claw creeper. Local specialist bush regenerators will be contracted to undertake weed management and restoration activities.

The specialist bush regeneration contractors will also provide mentoring and training opportunities for volunteers and TIDE's indigenous rangers at a series of working bees and field days and address native plant, threatened species and weed identification, seed collection and plant propagation, and the application of rainforest restoration techniques.

Council will be contributing significant in-kind resources to the project in the form of staff time to administer and coordinate the project, and through the use of Council's nursery facilities to propagate the plants.

Share the Shore

Several endangered and migratory shorebird species nest along our sandy beaches over Summer including the pied oystercatcher and the little tern. The beaches of the MidCoast are the most important breeding site for little terns in the state, normally producing up to a quarter of all fledglings in NSW. Flocks of little terns begin to arrive on NSW beaches to breed around September. Pied Oystercatchers may be resident all year round and tend to start nesting in August.

Eggs and chicks rely solely on camouflage for protection residing in clear open patches of sand. This makes them vulnerable to 4WDs, foxes, domestic dogs and even beach walkers, who may crush the almost-invisible eggs or continually disturb parent birds and keep them away from the nest, leaving eggs and chicks vulnerable to predation from seagulls.

A multi-agency working group consisting of representatives from MidCoast Council, Department of Industry – Crown Lands, HLLS, NPWS, TIDE, bird watching societies and essential local volunteers, have been collaborating to protect the shorebirds by coordinating efforts to monitor the nests, control foxes, install signs and erect temporary fencing to protect nest sites.

A 'Share the Shore' community awareness campaign was also launched by Council to encourage beach users to protect vulnerable nesting sites by taking heed of the advisory signage and staying out of fenced exclusion areas, only driving on designated 4WD beaches and below the high tide line, and walking dogs on leashes and complying with dog exclusion zones.



Littoral rainforest on exposed headlands

In 2019, MidCoast Council was successful in securing funding of \$100,000 through the NSW Environmental Trust's Restoration & Rehabilitation Program to undertake restoration works within littoral rainforest on exposed headlands at Burgess Beach, Cape Hawke and Seal Rocks in partnership with NPWS. The funding is being provided over a three-year period and is being matched with funding and resources provided through Council's Environmental Rate.

Exposed headland littoral rainforest makes up a large proportion of the 930 hectares of littoral rainforest mapped in the MidCoast region and is listed as endangered under both State and Federal legislation. Key threats currently affecting this threatened ecological community include the loss and fragmentation of native vegetation, the invasion of weeds, urban development and the impacts of recreational use.

This project endeavours to tackle these threats with a focus on reducing the presence of transformer weeds such as asparagus fern, morning glory and bitou bush. Asparagus fern grows in dense monocultures in the understorey smothering native vegetation and prohibiting natural regeneration. Given the difficulty in treating weeds on these exposed headlands, a team of abseiling bush regeneration contractors have been employed to undertake the control of these weeds.

This grant will complement the \$913,000 recently received through the NSW Coast and Estuary Grants Program to undertake environmental restoration works on Council managed land within the coastal reserve system, and a \$15,000 grant from the HLLS to restore a bushfire affected stand of littoral rainforest at Crowdy Head.

Biodiversity management

The MidCoast region contains important biodiversity and natural assets, which have intrinsic value and play a vital role in supporting our community's socioeconomic and cultural wellbeing. Maintaining healthy and biodiverse environments underpins the economy of the region and the way of life of its residents and visitors.

Much of the natural habitat in the region is on private land. To achieve our communities' vision for a healthy natural environment, we have a shared responsibility to appropriately and effectively manage, conserve and restore the biodiversity, environment and natural assets of the MidCoast region. From July 2018 to June 2021 Council undertook a range of projects to protect biodiversity across multiple tenures, working with community and government partners.

Biodiversity Framework

Over three years to June 2021, MidCoast Council developed a Biodiversity Framework in partnership with the community and other stakeholders. The framework was adopted by Council in July 2021. It outlines a 10-year program to maintain and enhance the condition and function of the natural environment.

Applying clear and consistent objectives for biodiversity will assist in meeting statutory requirements and achieving biodiversity outcomes. The framework brings together tools, projects and plans to help Council work in a coordinated and adaptive way.

The biodiversity program within the framework is grouped within six themes:

- Engagement and partnerships
- Reserves and conservation agreements
- Land management
- Science and knowledge
- Strategic planning and policies
- Land use planning and development

Implementation of the Biodiversity Framework will be both on Council land and private land, through voluntary partnerships and programs with the community, farmers and other landholders. It will work in the context of legislation and align with other relevant plans and policies.

It will position the MidCoast region to capture investment opportunities and help maintain our areas' liveability and desirability.



Land for wildlife

Most of the MidCoast region is made up of privately owned land which supports around 70% of our native vegetation. To protect and restore natural habitats, it is therefore crucial that private landholders get involved. Land for Wildlife is a voluntary program facilitated by Council that encourages landholders to manage biodiversity and wildlife habitat on their properties, focusing on the value of bushland in maintaining healthy catchments and supporting agriculture. In the MidCoast region, there are currently 77 properties participating in the program covering over 2,000 hectares of land.

Backyard Bushcare

The Backyard Bushcare initiative in Pacific Palms was designed to allow locals and Council to work together to protect the environment and enhance the bushland of the area.

The program ran over four years and included the inspection of over 1,250 properties for environmental weeds and the implementation of an extensive engagement program to work with landholders to remove weeds in their own backyards.

Based on initial inspections there were three main aims and key messages of the program:

- Pull out Bitou Bush, pull out Asparagus weeds
- If you are getting new plants for your garden, make sure they are either native or non-seeding
- Control other environmental weeds

To compliment these aims and assist in making local backyards more bushland friendly staff from the Natural Systems team undertook a variety of engagement initiatives including:

- 10 x awareness raising events including weed workshops, wetland walks and family fun day with over 400 participants
- 22 x educational resources developed, including a variety of weed information brochures that can be used throughout the LGA
- 100 hours of one-on-one weed removal technique education with residents in their backyards
- Giveaway of over 1,000 tubestock to be planted in local gardens

The project was a success with the second round of inspections showing 63% of properties weed free and a total of 116 properties which had reduced or eradicated the target species on their land.

Improving Council's geographic information system

The MidCoast region features diverse native vegetation types including endangered ecological communities listed at State and federal levels. These patches of native vegetation support wildlife and provide a range of important ecosystem services such as controlling erosion, supporting pollination, contributing to the water cycle and stabilising local micro-climate. Examples include coastal wetlands and littoral rainforest, both listed under the State Environmental Planning Policy (Coastal Management) 2018. Native vegetation can be found on both public and private land.

In order to manage these natural assets, Council undertook several landscape-scale projects to map plant communities, assess their character and condition and identify linkages for connectivity. Mapping projects covered the Karuah, Myall and Manning catchments.

The results have been added to Council's Geographic Information System to help us protect and manage native vegetation across the region through strategic land use planning and on-ground projects.

Weed management

Weeds are one of the most significant threats to biodiversity and ecosystem health. Weed management remains a key focus for Council with a variety of high priority weed infestations threatening biodiversity in our region. A range of weeds are being monitored and managed under integrated weed management programs on public and private land. These include:

- Alligator weed and Senegal Tea in the Karuah and Manning Catchments
- Parrot's feather management on the Myall River for the protection of the Ramsar listed Myall Lakes
- Amazon frogbit and tropical soda apple eradication projects to control these new and emerging species
- Tree poppy (*Bocconia spp*) eradication project managing this newly detected species (first recorded occurrence for the State)
- Groundsel bush eradication project managing this weed of limited distribution
- African olive and long-leaf willow primrose eradication / containment projects managing these weeds of limited distribution
- Ground asparagus management project for asset protection at priority sites.

Coastal Bitou Bush control

Council has continued to work closely with the NPWS to deliver a consistent approach to the management of bitou bush (*Chrysanthemoides monilifera*) along the coastal strip of the MidCoast region. Bitou bush invasion is classified under State legislation as a key

threatening process to our coastal ecosystems as it out-competes native vegetation and modifies the topography of the sand dune which increases the incidence of wind-borne erosion. The bitou bush control program is undertaken in winter while the bitou is flowering and most of the native vegetation is dormant, which allows lower concentrations of herbicide to be applied and minimises the adverse impact on native vegetation.

During the 2019/20 campaign, the Natural System's Biosecurity team engaged a professional contractor to treat over 170 hectares of bitou along our coastline from Crowdy Head to Yaccaba. In addition, this year saw special attention given to a section of the coast at Old Bar where a ground-based team worked alongside Manning Coastcare to target over seven hectares of mature bitou. Windbreaks were installed between the bitou to reduce wind scour (caused by the clumping growth form of the mature bitou) and to protect the sensitive rainforest vegetation growing behind the dune.

In 2021, Council trialled the use of agricultural drones as a new aerial technology in the application of the herbicide. The drone has offered some advantages over conventional helicopter aerial spraying such as the drone's ability to navigate sensitive environmental areas to target large outcrops of bitou which were previously inaccessible from the air. The drone also effectively treated post-fire vegetation to remove colonising bitou at Harrington and was able to tackle bitou growing on steep coastal headlands. The ability of the drone to better target the bitou also led to a reduction in herbicide usage across the coastal landscape.

The Natural Systems team is currently assessing the effectiveness and cost benefit of using drones to control bitou over more conventional techniques such as helicopters. Preliminary results indicate an 80% success rate of bitou control, as some areas such as bitou growing under the edge of dense canopies, were only partially affected by the herbicide.

Coastal management

MidCoast Council has several certified Coastal Zone Management Plans (CZMPs) in place to guide the management of this precious natural asset. These include the Great Lakes CZMP, Manning CZMP and Jimmys Beach CZMP. Projects during this Council's term included:

- A successful beach scraping trial at Old Bar Beach. Funding was received in 2021 to continue the beach scraping exercise and expand the area to include Manning Point and Wallabi Point.
- Ongoing operation of the Jimmys Beach Sand Transfer Station.
- Completion of navigational dredging at the Harrington backchannel and the Lower Myall River channel and commencement of dredging at Farquhar Inlet.

Stormwater management

When it rains untreated stormwater from the urban landscape flows into our waterways. Before the land was developed, rain soaked into the ground and nutrients such as nitrogen that occurs naturally in rainfall was taken up by the vegetation. Hard, impervious surfaces in urban areas including roofs, roads and pathways cause an increase in runoff, which fast-tracks a variety of nutrients directly into our waterways. Urban run-off picks up additional pollutants such as sediments, litter, petrochemicals, faecal coliforms, and heavy metals along the way.

MidCoast Council undertakes management of stormwater in a variety of ways utilising funds from the Stormwater Management services charge. A range of these projects are outlined below.

Maintenance of Stormwater Quality Improvement Devices (SQIDs)

The Natural Systems Team is working hard to ensure our stormwater treatment systems are operating effectively to protect waterways in the region. Stormwater treatment systems were previously installed throughout the local government area and include Gross Pollutant Traps (GPTs) and biological systems such as wetlands and bio-retentions. These stormwater treatment systems filter out pollution before it has a chance to enter our waterways.

In 2019 Council established an ongoing project to improve maintenance of Stormwater Quality Improvement Devices. An audit of the majority of GPTs in the MidCoast region was undertaken. The audit assessed how well the GPTs were functioning and provided recommendations for repair and data sheets for undertaking comprehensive cleaning and maintenance.

Following the audit, a comprehensive clean of each device was undertaken and rectification works were completed on numerous devices that had started to deteriorate with age. An ongoing inspection program is underway to monitor the levels of pollution entering each device which allows for a more refined maintenance program and targeted community engagement and education.

Information on each of the devices was entered into the MidCoast asset management system for a more systematic approach to maintenance. Since completing the program for the GPTs an audit is now being undertaken of the wetlands and bioretention systems.



Townsend Street constructed wetland

Works to maintain the Townsend Street constructed wetland were undertaken between 2018 and 2020 in order to ensure it can continue to protect the water quality of Wallis Lake. Constructed in 2001 to treat stormwater from 90 hectares of the surrounding suburban area, the wetland had reached the end of its expected functional lifetime.

Sediments in the estuary reduce the amount of light available for seagrass to grow, which is a natural habitat for aquatic life. Excess nutrients fuel algal blooms which also lead to habitat loss, impacting fish and aquatic bug populations. Townsend Street Wetland helps prevent this by removing sediment and filtering nutrients from urban runoff prior to discharge into the Lake.

The maintenance work involved removing built-up sediment from the wetland, upgrading the bypass channel as well as structural works to replace the trash racks that filter out litter before it enters the wetland.

The deep wetland basins were planted with 3,000 specialised wetland species while the wetland batters were planted with 4,500 native grasses. Interpretative site signage was installed to inform the community on the importance and function of the wetland.

The refurbished wetland will now effectively collect and treat stormwater from 90 hectares of the catchment for the next 10-15 years. This project was supported by the Stormwater Management Services Charge and the NSW Government through its Coast and Estuary Program.



Applying water sensitive urban design to new development

Council is focused on protecting waterways from the effects of urban development through the implementation of a water sensitive design policy that makes up part of the Development Control Plan (DCP). This policy requires all new developments to design and install water quality treatments such as raingardens and water tanks to help filter nutrients and sediment out of stormwater before it enters our waterways. In large developments like subdivisions, there is a target in the DCP to ensure that there are no new impacts on our waterways.

This is called a neutral or beneficial effect target. Since 2018, 22 large subdivisions have achieved the 'no new impact' target. In the 2019/20 financial year five large subdivisions across the MidCoast region and an additional 19 large developments such as commercial, industrial and multi dwellings have also been assessed.

Small scale, infill developments such as single dwellings are also included in the DCP providing further protection from nutrient and sediment input to our waterways, these controls are only applied to the Great Lakes region. Since 2018, 497 individual houses have been approved that were required to address water sensitive design. It is estimated that by reducing pollutant loads to the required standard on these lots through raingardens, swales and rainwater tanks we have prevented 177 kg of total nitrogen and 21.5 kg of total phosphorous from being washed into our waterways annually. In addition to the nutrient reductions, it is estimated that 10.5 tonnes of sediment have been intercepted by these water quality treatments on single dwellings each year.

These figures are conservative as additional nutrient and sediment removal will be achieved on dual occupancies and other developments such as commercial and industrial development during this time frame.



Estuary and catchment management

The MidCoast region contains six major estuarine areas including river, lake and creek estuaries. These estuaries are fed by rivers including the Manning, Wallamba, Coolongolook, Wallingat, Myall and Crawford Rivers.

Estuaries are unique and important natural environments that contain a wide range of habitats and ecosystems and support a diversity of plants and animals. Estuaries are the most intensively used areas of the MidCoast. They have significant environmental, cultural, recreational and commercial value.

Rivers in the MidCoast region mainly flow through natural and agricultural landscapes. They supply potable water for our community as well as water for irrigation and stock. Rivers are enjoyed for their scenery, tranquillity and recreational activities such as swimming, fishing and boating. They provide important habitat corridors for wildlife dispersion. Land use throughout their catchments impacts on water quality and ecosystem health.

Manning River Estuary and Catchment Management Program

MidCoast Council has worked together with stakeholders and the community to develop the Manning River Estuary and Catchment Management Program (ECMP), adopted in July 2021. It sets out a 10-year action program for Council, our community and partner organisations to improve the health and resilience of the Manning River and estuary.

The MidCoast community has a strong attachment to the Manning River, which provides water for drinking, stock, irrigation, oyster farming and recreation. Generations of Gathang-speaking Aboriginal people have been engaged in the river through fishing and swimming. They hold knowledge of those places along the river with special meaning. It is important for them to maintain spiritual and close connection to the water.

The Manning River ECMP takes a whole-of-catchment approach aiming to protect and improve the ecological health of the Manning estuary and its catchment, and in doing so support the social, cultural and economic values of the region. In all, over 300 people were involved in development of this program with representatives from the beef, dairy and oyster industries, Purfleet-Taree Local Aboriginal Land Council, Landcare, Coastcare and government agencies.

Actions are grouped around eight themes:

1. Stewardship
2. Water quality and ecosystem health
3. Climate change
4. Biodiversity
5. Aboriginal custodianship
6. Social and economic values
7. Land use planning
8. Governance

It presents opportunities for mobilising existing partners such as HLLS and MidCoast2Tops Landcare, community and industry groups and landholders to help look after this valuable natural asset.

In Council's Delivery Program (2018-21) and Operational Plan (2020-21), development of the Manning River ECMP contributes to Strategy 7.3: "Protect, maintain and restore water quality with our estuaries, wetlands and waterways." It fulfils focus reference 7.3.2 "Develop a Manning River Coastal (catchment and estuary) Management Plan (CMP)".



Working with poultry farmers in the Karuah catchment

The Karuah River and its tributaries including the Branch Creek flow into the Port Stephens Marine Park, which contains a diverse range of habitats, including beaches, seagrass beds, mangroves, saltmarsh and open waters. Port Stephens is a popular tourism destination, produces oysters and is home to a diverse array of aquatic fauna and birdlife.

The Karuah Catchment Management Plan identified that habitat fragmentation is reducing the resilience of ecosystems within the catchment and that poor water quality is impacting the health of the river and wider Port Stephens Estuary. The Branch Creek in the MidCoast region has consistently shown high nutrient levels during water quality testing.

There are over 30 intensive poultry farms within the Karuah River catchment. These farms are a crucial part of the local economy. Most poultry farms have established grazing enterprises in the land buffers around their poultry sheds and use poultry litter to fertilise their pastures, which can cause excess nutrients to run-off into this environmentally sensitive waterway.

Throughout the reporting period, MidCoast Council and HLLS partnered to focus on these grazing areas beyond the shed to help poultry farmers understand what's happening in their paddocks, improve nutrient management and reduce impacts on the river.

200 soil tests were undertaken on 25 participating farms to identify nutrients lacking or in surplus in their soils. Through one-on-one advice most farms found that their paddocks were highly productive, without the need for more nutrients in the form of chicken litter. Funding was provided to each participating farm, with over \$700,000 being spent on farm improvement projects.

Farmers are now selling most of their litter off-farm to other areas low in nutrients. Farms have implemented management strategies such as rotational grazing, waterway fencing, off-

stream watering, alternate fertiliser applications to meet nutrient deficits, reduction of runoff and new pasture mixes.

This project is giving farmers the opportunity to understand, and proactively take control of nutrient management on their farms to improve their grazing business and reduce impacts on the river. There is great opportunity to expand this program in other regions or intensive farming industries. The project has been assisted with funds from the NSW Government through its Environmental Trust.

Farmers in the estuary protecting wetlands and water quality

Also in the Karuah catchment, Council partnered with HLLS, Karuah Landcare Group, and Landcare Australia and local farmers to improve farm management, protect coastal wetlands and enhance biodiversity in the Karuah River Catchment.

The project provided financial incentive grants and advice to eight landholders on neighbouring properties in The Branch. The farmers fenced-off wetlands and riparian vegetation, installed off-stream water points and rehabilitated gully-lines. As a result, 270 hectares of wetlands and 50 hectares of riparian vegetation are now protected and will regenerate to help keep the Karuah River clean.

The farmers involved with this program committed significant time and effort as well as cash to initially develop their individual projects and install the associated infrastructure. This project would not have been possible if it wasn't for these farmers' passion for the land and commitment to protecting the health of the Karuah River.

The University of Newcastle is monitoring the project outcomes including vegetation condition and water quality. This will enable us to understand the effectiveness of the project and promote its benefits to other landholders on riverfront throughout the region.



Protecting drought refuge pools for aquatic wildlife

Freshwater refuge pools play a critical role supporting local and regional biodiversity. During drought, refuge pools are habitats that aquatic fauna retreat to, persist in and then repopulate waterways once conditions improve.

During the reporting period Council commissioned a pilot study to identify and map priority reaches most likely to contain refuge pools for platypus and the Manning River helmeted turtle. The study is being used to guide a range of conservation efforts including water monitoring, habitat restoration and predator control.



Riverbank restoration

MidCoast estuarine waters are exposed to severe bank erosion in many areas due to past vegetation clearance, ongoing cattle grazing and wash from boating activities. Sediments from this erosion reduce water clarity and impact on ecological health.

Works to address riverbank erosion and enhance aquatic habitat are taking place throughout the region including in the Wallamba River and Manning River estuaries. Works undertaken between 2018 and 2020 included:

- Installation of 1,995m of rock and timber fillets
- Erection of 3,690m of stock exclusion fencing
- Planting of over 6,520 native tubestock

These projects were funded through a combination of Council's Environmental Rate, the NSW Coast & Estuary Program, NSW Environmental Trust's Restoration & Rehabilitation Program and the NSW Recreational Fishing Trust's Habitat Action Grant Program.



Installation of oyster reefs

MidCoast Council in partnership with HLLS and TIDE constructed an oyster reef in the Wallamba River to protect the bank from erosion and assist in the establishment of mangroves. The project trialed new ways to provide wave protection by placing waste shell from oyster production along the bank.

Oysters are filter feeders and as their filtration helps improve water clarity it is hoped that the oysters at Gereeba Island will survive and thrive alongside mangroves, providing habitat for fish and invertebrates.

Site monitoring is being undertaken by LLS, TIDE and the University of Newcastle. Early results are promising with live oysters surviving and growing and the structure continuing to protect young mangroves and the riverbank. Sediment accretion increased showing that the shells are acting as sediment traps, reducing resuspension and reducing wave action and bank erosion and a higher diversity and abundance of invertebrate fauna at restoration sites indicates they are functioning as an important invertebrate habitat. Monitoring will continue to see the long-term effects of the oyster reefs.



Dumaresq Island riverbank restoration

In 2019 Council in partnership with a local landholder was successful in obtaining a \$40,000 Habitat Action Grant from the Department of Primary Industries to address a significant erosion issue and improve fish habitat on the Manning River at Dumaresq Island. Prior to the works, a two-meter-high bank was being dramatically eroded into the Manning River. Sedimentation of such a high degree not only clogs up our estuary but also smothers seagrass – an essential habitat for many aquatic species.

The project resulted in the erection of stock exclusion fencing to keep cattle off the riverbank, which was planted with over 500 native trees. Major weed infestations of bamboo and camphor laurel were removed to allow for natural regeneration. The riverbank itself was restored via the construction of 410m of rock fillets which create an artificial reef that simultaneously protects the bank while creating an environment suitable for mangroves and saltmarsh. In time, the clearer water may even see the return of the sea grass community.

Environmental works such as these return the environmental functionality of the area. The saltmarsh and mangrove vegetation provide habitat and food for fish, thereby increasing their chances of survivorship. These plant communities also act as a buffer, filtering out nutrients from the land and preventing erosion – thereby helping to create a cleaner and clearer Manning River for our fish and our community.

Partnerships for natural resource management

MidCoast Council's Natural Systems team and HLLS have a shared mission to enhance and protect biodiversity, ecosystems, water quality, creeks, rivers and estuarine, coastal and marine environments. In 2019 both organisations commenced a process to formalise this partnership through a Memorandum of Understanding (MOU) to increase the efficiencies and benefits of working together and achieve far greater outcomes than could be achieved alone.

Key projects that have come out of the initial stages of this MOU include the Beyond the Shed project targeting intensive poultry farmers; the Karuah Catchment Management Grants

Program which secured on-ground investment to protect riparian corridors and wetlands in The Branch; and the Oyster Reef program in the Wallamba River.

Council also worked together with the MidCoast2Tops Landcare network to develop an MOU between our two organisations. Aiming for sign-off in September 2021, the MOU will build on the strengths of each organisation to promote our common purpose for natural resource management and community engagement.

Major grants secured

Council's Natural Systems team uses the Environmental Rate to leverage grant funding from a range of government agencies. Major grants (over \$100,000) secured from July 2018 to June 2021 are shown in Table 1 below.

Project Name	Grant Amount (ex GST)
Aerial Bitou Control: Crowdy to Harrington Lagoon	\$147,840.00
Restoration of Fire affected and Refuge Rainforest	\$150,000.00
Securing priority refuges for the Manning River helmeted turtle	\$143,500.00
Bushfire recovery for koalas and the community on the MidCoast	\$130,000
MidCoast Council Partnership: Deer and Pest Project	\$191,000
Manning River Estuary and Catchment Management Plan Stages 3-4	\$108,150
Karuah Catchment Management Grants Program	\$345,000
Coastal Reserves Bushfire Recovery Project	\$913,719
Cooperook Swamp Acid Sulfate Soil Remediation Project	\$250,000
Marine Estate Management Strategy Stage 1: Road and track improvements and bank protection	\$1,170,313
Addressing water sensitive design priorities to improve estuary health	\$162,500
Improving stormwater quality for estuary health	\$174,000
Marine Estate Management Strategy Stage 2 - Road and track improvements	\$360,000
Beyond the Shed Stage 2	\$100,000
MidCoast LGA coordinated post-fire weed management project	\$425,000
Total major grant value	\$4,237,023

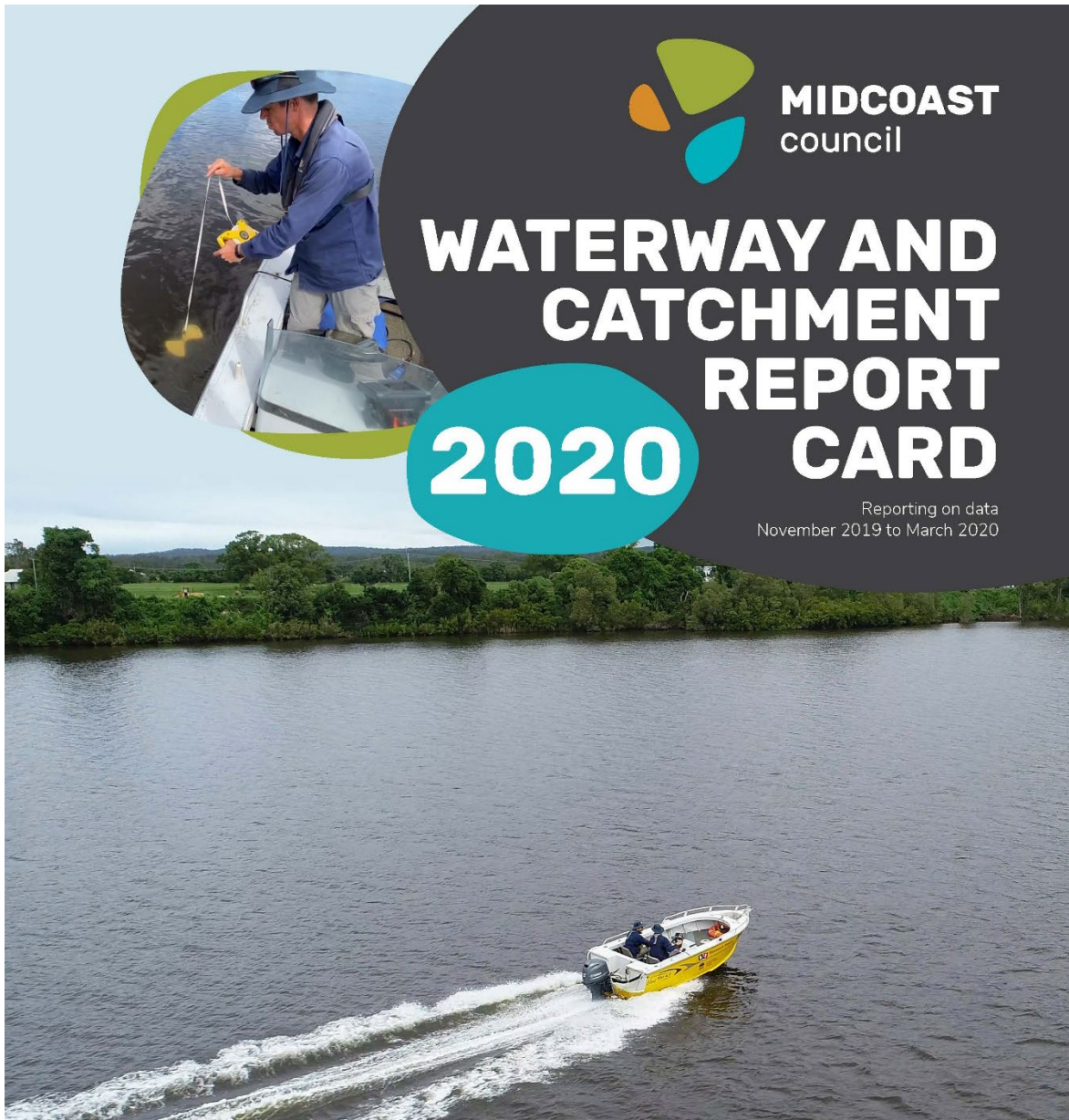
Table 1: Grants over \$100,000 secured to protect and restore our natural environment

Our indicators

What is a report card?

What we do on the land impacts on the quality of water that runs off. If the quality of the runoff is poor, it puts stress on the environment. Stressors are changes to the environment that result from these activities and can lead to ecological harm.

Water quality monitoring can be undertaken to assess these stressors and their impact. In the MidCoast monitoring program we look at several indicators including chlorophyll-a (algae), seagrasses and turbidity.



Why a report card?

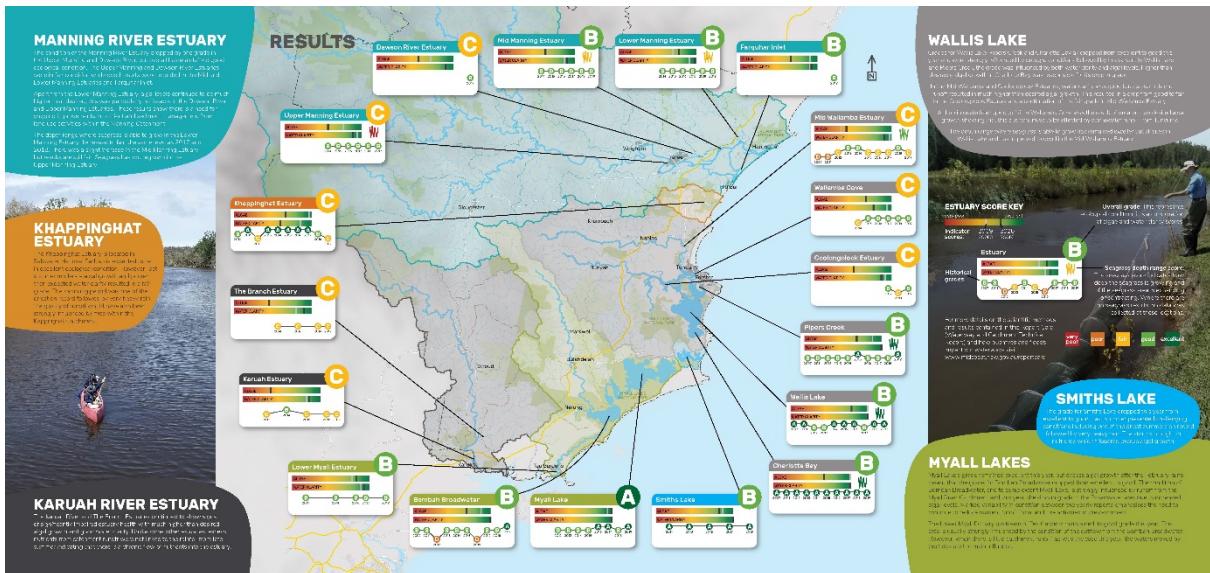
Report cards are an effective way to check on the health of our waterways when compared to other NSW waterways. They help us compare current conditions with the condition we would like them to be. Scientists use indicators to 'health check' our waterways. Just as your body temperature is used as an indicator that something may be wrong with your own health,

indicators are used to show if something is out of balance or unhealthy in the system. The indicators are selected to assess the overall health or ecological condition. The results of the Report Card are used to guide future management actions and ensure long-term ecological health of our catchments.

Report Card Results 2018 – 2020

During the period covered in this report there were three Waterway and Catchment Report Card monitoring programs undertaken and reported on. During that time a total of 18 sites across six catchments were monitored and of these sites eight maintained their 2018 grade in 2020, one site improved from its 2018 grade in 2020 and nine sites dropped a grade from 2018 to 2020.

It is important to note that the results during the period from 2018-2020 were heavily influenced by climatic conditions which included an extended drought, bushfires in large areas of the region which affected multiple catchments, followed by heavy rain periods with minor flooding. These climatic conditions must be considered when comparing the results.



Manning River estuary

The condition of the Manning River estuary remained relatively stable between 2018 and 2020 with most sites maintaining good ecological condition (B grade).

In 2018 three Manning River Estuary sites were monitored (Upper, Mid and Lower Estuary) while in 2019 and 2020 two additional sites were monitored (Dawson River Estuary and Farquhar Inlet).

In 2020 there was a change in results in the Upper Manning and Dawson River Estuaries to fair condition (C grade) while a continuation of the good ecological health results was recorded in the Mid and Lower Manning Estuaries and Farquhar Inlet.

Throughout the 2018-2020 period algal levels continued to be much higher than desired; this was particularly noticeable in the Dawson River and Upper Manning Estuaries. These results show there is a need for ongoing improvements in nutrient and sediment management from land use activities within the Manning catchment.

Khappinghat estuary

The Khappinghat estuary is located in Saltwater National Park so is expected to be in excellent ecological condition. However, in the period from 2018 – 2020 moderate algal growth and poorer than expected water clarity resulted in a drop from a good (B) grade in 2018 to a fair (C) grade in 2019 and 2020. It is important to note that the sampling periods were some of the driest on record followed by extensive fires through the catchment and very heavy rains which would have influenced these results.

Wallis Lake

The Wallis Lake system contains six monitoring sites. During the period 2018 to 2020 half of those sites maintained their grades, while the remaining sites dropped a grade.

During 2020 three sites (Charlotte Bay, Wallis Lake and Pipers Creek) received a good (B) grade while three sites (Mid Wallamba and Coolongolook estuaries and Wallamba Cove) received a fair (C) grade.

In Wallis Lake and Pipers Creek, the grade was influenced by both water clarity and algal levels. Higher than desirable algal growth in Charlotte Bay was also responsible for its drop in grade. In the Mid Wallamba and Coolongolook estuaries, water clarity was good but excess nutrient runoff resulted in much higher than desired algal growth. A drop in grade from good to fair in Wallamba Cove was the result of greater than desired algal growth showing that this site continues to be affected by stormwater runoff from Tuncurry.

Karuah River estuary

The Karuah River and The Branch estuaries have maintained a fair (C) grade throughout 2018 to 2020. These sites continued to show signs of significantly impaired estuary health with much higher than desired algal growth and good water clarity. Excess nutrient results indicate that there is a chronic flow of nutrients into the estuary from the Upper Catchment.

Smiths Lake

The grade for Smiths Lake remained in excellent condition (A grade) in 2018 and 2019 before a drop from excellent (A) to good (B) in 2020. The 2020 monitoring period presented challenging conditions including one of the driest summers on record followed by very heavy rain. The storms brought in nutrients which triggered excess algal growth resulting in the drop in grade.

Myall Lakes

Myall Lakes condition remained stable between 2018 and 2020 with all three sites in either excellent (A grade) or good (B grade) ecological health. Excess algal growth saw variation in the grades from year to year which emphasises the need to continue to reduce nutrient runoff from land use activities in the catchment.

Who helped us?

A range of agencies, community groups and stakeholders helped Council achieve our goals to manage resources wisely. They included:

- The NSW Government including funding assistance from the Environmental Trust, the Coast and Estuary Program, Fish Habitat Action Grants, Rescuing Our Waterways Program, Crown Reserves Improvement Fund and the Marine Estate Management Strategy
- The Australian Government provided funding assistance through the Bushfire Recovery for Wildlife and Habitat Program
- Hunter Local Land Services
- MidCoast2Tops Landcare Network including Manning Coastcare, Manning Landcare and Karuah-Great Lakes Landcare
- Friends of Browns Creek
- Manning River Helmeted Turtle Steering Committee
- Landcare Australia
- National Parks and Wildlife Service
- NSW Department of Primary Industries (Fisheries)
- NSW Department of Planning, Industry and Environment
- NSW Health
- NSW Environment Protection Authority
- Roads and Maritime Services
- Taree Indigenous Development and Employment
- Waste Aid
- MidCoast Council volunteer network
- NSW Weed Biological Control Taskforce
- Boomerang Beach Dune Care Group
- Blueys Beach Dune Care Group
- Pacific Palms Wetland volunteers
- Pacific Palms gardening group
- Wallis and Smiths Coast and Estuary Committee
- Manning River Estuary Catchment Management Program Reference Group
- Old Bar/Manning Point Coastal Management Program Reference Group
- Koalas in Care Incorporated



3 We manage our resources wisely

Climate change

In 2019-2021, the MidCoast region experienced first-hand the disastrous effects of climate change including the worst bushfire season on record, which burnt almost one quarter of the local government area and resulted in a significant loss of biodiversity, life and property; an increase in the number of intense storm events resulting in coastal erosion and localised flooding; and a substantial reduction in annual rainfall leading to a crippling drought and the introduction of Level 4 (severe) water restrictions for the very first time. Since 2009, the MidCoast region has had 23 natural disaster declarations; the second worst affected council area in NSW (NSW Office of Emergency Management, 2020).

MidCoast Council recognises a state of climate emergency exists, with councillors declaring a climate emergency in October 2019. In declaring a state of climate emergency, Council has affirmed that urgent action is required by all levels of government, including local councils, to avert a climate crisis. To help us do this, Council has prepared a Climate Change Policy and Strategy, to both manage and reduce our greenhouse emissions, and adapt our practices and infrastructure to become more resilient to the impacts of climate change.

In adopting these documents, MidCoast Council has committed to achieving **net zero greenhouse emissions** from its operations (including facilities, fleet and waste) and **100% renewable electricity for its operations by 2040**.

Over 150 actions are proposed in the Strategy to meet these targets. Council will offset those emissions that can't be mitigated by purchasing renewable energy and investing in local carbon sequestration initiatives such as tree planting programs and the restoration of coastal wetlands.

The strategy also identifies a range of measures to increase the resilience of Council's operations to the impacts of climate change, including the increased risk of flooding and bushfire, accelerated coastal erosion, and a reduction in annual rainfall, river flow and water supply.

The Climate Change Strategy can be best represented by Figure 1 below, which illustrates nine key areas for action. When implemented together in a planned way, the actions will significantly reduce energy demand, increase on-site renewables, reduce emissions and increase Council's resilience to climate change.



Figure 1: Climate Change Strategy themes for action

It is important to note that the Strategy is just the first phase of Council's response to climate change and is focused on Council's assets and operations so that we can learn and lead by example.

The second phase will focus on working with the community to develop an action plan to reduce the region's greenhouse emissions and to help the community adapt to the unavoidable impacts of climate change.

Managing energy

Inclusive of energy and waste, MidCoast Council's carbon emissions were estimated to be 101,540 tonnes of CO₂-e in 2018-19 (Table 2), the base year selected for the development of the Climate Change Strategy.








	Emission source	Activity data	Units	Scope 1 t CO ₂ -e	Scope 2 t CO ₂ -e	Scope 3 t CO ₂ -e	Total	%
	Diesel for fleet	1,374	kL	3,739		191	3,929	3.9%
	Petrol for fleet	185	kL	428		23	451	0.4%
	Ethanol for fleet	1	kL	0.01		0	0.01	0.0%
	Biodiesel	3	kL	0.28		0	0.28	0.0%
	LPG	10	kL	16		1	17	0.0%
	Electricity used in council assets	23,896,597	kWh		19,356	2,151	21,507	21.2%
	Electricity used by streetlighting	3,431,681	kWh			3,089	3,089	3.0%
	Electricity use from solar PV	86,470	kWh				0	0.0%
	Waste water	9,052	t CO ₂ -e	9,052			9,052	8.9%
	Landfill waste	52,912	t	63,494			63,494	62.5%
	TOTAL:			76,730	19,356	5,454	101,540	100.0%

Table 1: MidCoast Council carbon footprint 2018-19

More than 71% of these emissions are associated with waste, with most of this attributed to the disposal of the community’s waste to landfill. Almost 9% of emissions relate to direct emissions from wastewater treatment plants. The remainder of emissions from Council’s operations (28.6%) are caused by the consumption of electricity and fuel to operate facilities and fleet that are used to administer Council, provide community services and manage and maintain Council’s roads, parks and public spaces.

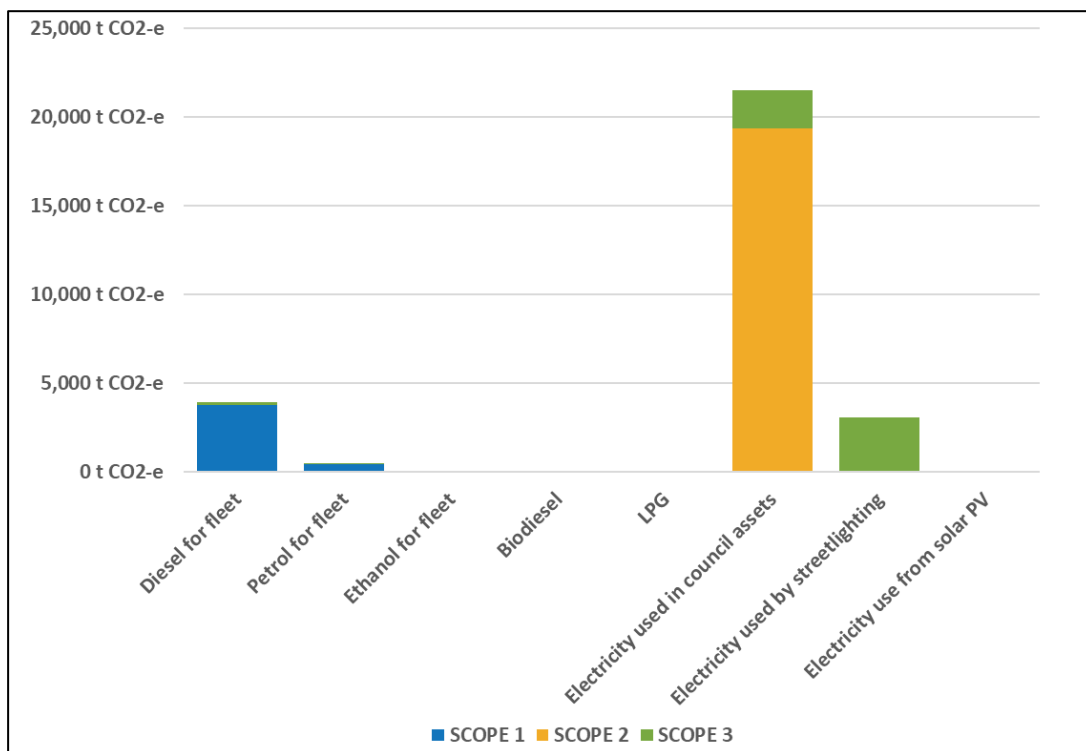


Figure 2: MidCoast Council energy-related carbon footprint by emissions source 2018-19

Electricity use accounts for 85% of Council's energy-related emissions. Figure 3 below provides a breakdown of this consumption and shows that water and sewer assets consume 65% of Council's power, while unmetered street lighting and swimming pools use 13% and 9% respectively. Electricity usage in Council's buildings, sporting facilities, parks, public lighting and amenities make up around 11% of Council's total electricity use.

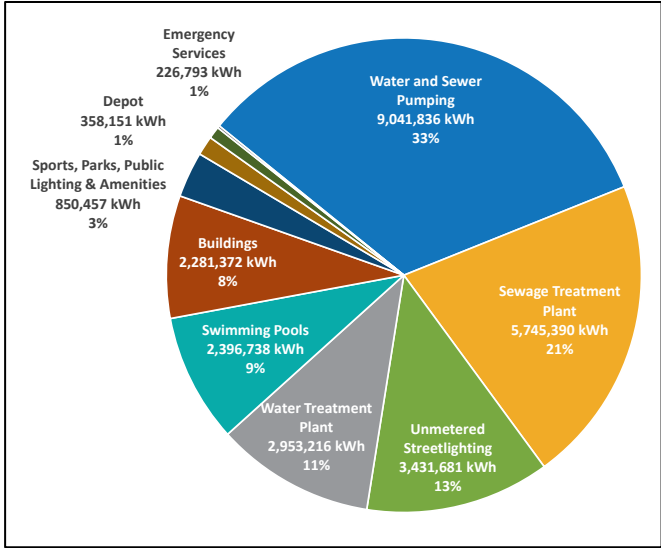


Figure 3: Breakdown of energy-related emissions (2018-19)

Over the past few years, MidCoast Council has been active in making its operations more energy-efficient and installing renewable energy systems to reduce its carbon footprint including:

- Undertaking energy audits and developing energy management plans for Council's major facilities.
- Installing over 360kW of solar panels on public buildings including the recent installation of a 160kW solar PV system at Council's new administration centre – Yalawanyi Ganya (one of only 3 systems larger than 100kW in the region).
- Successful application for a grant by the Men's Shed to install a 40kW solar array on its shed at the Tuncurry Waste Management Centre.
- Implementing various energy efficiency measures such as lighting retrofits, replacing electric hot water systems with heat pumps, air conditioning upgrades and power factor correction.
- Procurement of four hybrid passenger vehicles in Council's fleet and the installation of two electric vehicle charging stations at Yalawanyi Ganya.
- Undertaking an LED street lighting retrofit program with 5,369 streetlights retrofitted to date.
- Monitoring Council's energy and water consumption, carbon emissions and reductions through its subscription to Azility.

Council's Climate Change Strategy sets out the case for a range of cost-effective actions that that can be implemented progressively over several years to mitigate and adapt to climate change in Council's operations and meet Council's target of net zero emissions by 2040.

Specifically, the Strategy focuses Council's efforts on increasing the uptake of on-site solar photovoltaic (PV) systems and batteries (particularly for its water and sewer assets), energy efficiency and purchasing of renewable energy in the short to medium term, to progressively increasing its renewable energy supply as batteries and electric vehicles become more cost effective over time, and to continually improve its sustainable procurement policies and practices to make Council's operations more energy efficient.



Managing waste

MidCoast waste services aim to sustainably and proactively manage waste disposal and resource consumption in line with the United Nations Sustainable Development Goals and national and NSW waste management policies and plans.

The 2030 MidCoast Waste Management Strategy has established priority areas to better manage waste as a valuable resource and reduce the environmental impacts of waste disposal. The Strategy goal sets 75% of waste to be diverted from landfill by 2030, up from 63% in 2018. The Strategy actions are grouped under five focus areas which are broadly aligned with the NSW Government's EPA waste hierarchy priorities:

1. **Avoidance** including action to reduce the amount of waste generated by households, industry and all levels of government
2. **Resource recovery** including re-use, recycling, reprocessing and energy recovery, consistent with the most efficient use of the recovered resources
3. **Disposal** including management of all disposal options in the most environmentally responsible manner.

Table 3 below represents rounded figures on the sources of materials received by our facilities - Municipal Solid Waste (MSW), Commercial and Industrial Waste (C & I) and Construction and Demolition (C & D). The biggest gain was in Construction and Demolition waste which fell from 16% to 4% of waste received by Council facilities.

MidCoast waste profile 2018	MidCoast waste profile 2021
The 2018 diversion rate of 63% is inclusive of all waste diverted from the three sources	
Council-run waste facilities received 121,000 tonnes of material in 2017-18	Council Run Waste Management Centres received 135,385 tonnes of material in 2020-21
65% (78,000 tonnes) was generated by households, public places and Council operations (MSW)	73% (98,694 tonnes) was generated by households, public places and Council operations (MSW)
19% (23,000 tonnes) was generated by commercial premises (C & I)	23% (31,708 tonnes) was generated by commercial premises (C & I)
16% (20,000 tonnes) was generated by building and construction businesses (C & D)	4% (4,982.96 tonnes) was generated by building and construction businesses (C & D)
Of the 121,000 tonnes, 37% (44,000 tonnes) went to landfill and 63% (77,000 tonnes) was re-directed to a range of recycling facilities or for reuse	Of the 135,385 tonnes, 48% (64,864 tonnes) went to landfill and 52% (70,521 tonnes) was re-directed to a range of recycling facilities or for reuse

Table 2: Comparison of Council's waste profile

Waste diversion for 2020-21 was impacted by the large amount of debris generated from the floods that could not be separated and recycled.

Landfill monitoring program

Environmental considerations are important in the planning and management of landfills, the prevention of leachate and the potential capture of methane gas emissions. Managing waste aims to:

- Ensure continuity of landfill management at the Taree Waste Management Centre landfill site
- Research and plan medium- and long-term landfill requirements and rationalise facilities if required
- Mitigate odour and environmental harm from current and closed landfills
- Research alternative options to landfill in the long term
- Research and develop innovative landfill management solutions with an aim to minimise our carbon footprint and maximise landfill life
- Ensure sites meet and exceed minimum environmental standards
- Encourage resource recovery, reuse and repurposing at all our facilities

The following data is collected for ongoing monitoring:

- Environmental management plan compliance report (weekly)
- Water sampling of leachate ponds at Taree Waste Management Centre (WMC) (weekly)
- Leachate pond monitoring at Gloucester WMC (monthly)
- Bore sampling at Tuncurry WMC (quarterly)
- Bore sampling Tea Garden WMC and Bulahdelah WMC (annually)
- Bore, leachate and storm water pond sampling and monitoring at Stroud WMC (annually)
- Odour and methane gas monitoring at Taree WMC (annually)
- Methane gas monitoring at Tuncurry WMC (annually)

Environmental monitoring and reporting requirements for waste operations are regulated by the NSW Environmental Protection Authority.

Kerbside waste audit

MidCoast Council regularly participates in a regional kerbside waste audit. This is an assessment of the contents of the household three-bin waste collection system. The results for the MidCoast region are shown below:

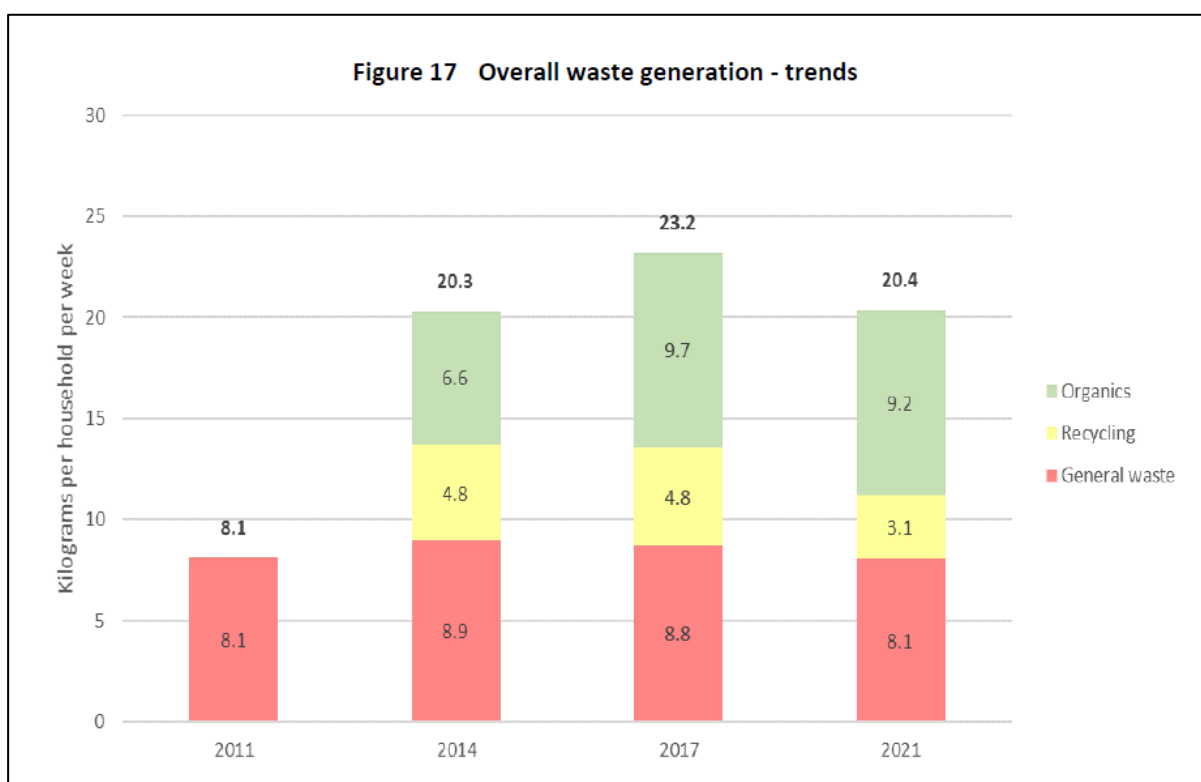


Table 3: MidCoast overall household waste generation trends (APC 2021)

Overall total domestic waste generation per household in 2021 (20.4 kg) is less than 2017 (23.3 kg) as shown in Table 4. Recycling has decreased from 4.8 kg per week in both 2014 and 2017 to 3.1 kg per week in 2021, which coincides with the introduction of the Container Deposit Scheme (CDS) in December 2017. Garden organics have increased from 6.6 kg per week in 2014 to 9.7kg per week in 2017 and a slight decrease of 0.7 kg to 9.2 kg in 2021. The 2014 and 2011 data represents the combined average sub-regional data of the former three councils which now form MidCoast Council.

Targeted waste and resource recovery education activities

The MidCoast Waste Management Strategy informs the Waste and Resource Recovery Education Plan 2020-2024 to focus on the following objectives:

- Increase in diversion from landfill through correct recycling
- Decrease in contamination of recyclables through correct recycling
- Increase in household waste taken to Community Recycling Centres
- Increase in food waste diversion from landfill
- Decrease in the use of soft and single use plastics
- Reduced incidence of illegal dumping and littering

NSW EPA Waste Less, Recycle More initiative, funded from the waste levy, provides \$119,000 annually for activities to increase waste diversion from landfill.

Re-imagine Waste is the over-arching theme for activities designed to encourage and inspire change in attitudes and behaviour amongst MidCoast residents. Current programs dealing with specific waste streams include:

- Workshops, training and equipment to encourage composting of food waste which comprises around 34% of household waste
- Tours of the Material Recovery Facility at Tuncurry and general community and schools recycling education aimed at reducing contamination in the yellow recycling and green organics bins and increasing diversion from the red landfill bin

Council undertook a range of waste and resource recovery education activities during the reporting period, with increasing reliance on delivering via digital and mixed media platforms due to the COVID-19 pandemic. The following three programs highlight some of the targeted education activities.

Scraps to Soil

Currently one third of all household waste thrown away and sent to landfill is organic and compostable. Putrescible waste in landfill contributes to methane production and to landfill leachate. The Scraps to Soil program aims to divert this food waste from the household red landfill bin into compost. Whilst our workshop program was paused due to COVID-19, the online learning tutorial and subsidised compost bin offer continued to attract household participation.



Figure 4: Scraps to Soil workshop

The results shown in Table 4 below, indicate the diversion estimates based on 2.3kg of food waste per household, per week (MidCoast Council kerbside waste audit 2021). Note that in 2020 and 2021, COVID-19 restrictions prevented collection of compost bins from customer service centres, causing a drop in participation.

Objective	Increase in food waste diversion from landfill			
Year	2018	2019	2020	June 2021
Household participation rate	600	160	97	15
Diversion estimate per household per year	72 tonnes	19.2 tonnes	11.64 tonnes	1.8 tonnes
Result: Total food waste diversion from 872 households participating in this home composting program estimated to be 104.64 tonnes per year				

Table 4: Home food waste composting education program

Household problem waste

Problem waste items such as old batteries, gas bottles, paint and e-waste are hazardous and can't be recycled in household waste bins. Community Recycling Centres (CRC) are established to accept EPA approved hazardous waste for free. This education program has promoted CRCs for the safe disposal of hazardous waste.

The CRC Mobile Recycling Trailer also visited remote locations to assist residents dispose of problem waste. Households were informed through letter box distribution and multimedia channels.



Figure 5: CRC Mobile Recycling Trailer postcard

The results shown in Table 6 below indicate the tonnes of problem waste collected for recycling through the CRCs. These volumes represent waste diverted from landfill.

Objective	Increase household waste taken to Community Recycling Centres (CRCs)			
Year	2018	2019	2020	2021
Total volume disposed of at CRCs (tonnes)	78.66	87.66	96.76	148.16
Volume CRC waste collected by mobile trailer (tonnes)	10	6.50	Ceased operations	-

Table 5: Volume of waste disposed at CRCs and via the mobile recycling trailer program

School education program - Plastic Pollution Reduction Project

One of our biggest and most profound environmental impacts is plastic pollution. For the past few years MidCoast Council has partnered with Take3 for the Sea, HLLS and TIDE to engage with schools and address the impact of plastic waste on marine environments.

The program builds school relationships, supports students to be proactive and resilient and helps bring their ideas on source reduction to fruition. As future leaders we want the students' ideas to succeed into the future.

Each year students have focused on a hero species:

- 2018 Project Green Sea Turtle
- 2019 Project Loggerhead Turtle
- (2020 Project could not progress due to COVID-19 restrictions)
- 2021 Manning River Helmeted Turtle Project

All MidCoast schools are encouraged to send their student leaders to participate in a one-day workshop to design student-led projects. Students become the school's experts and advocates for our aquatic hero species. The program increases student's knowledge of litter, threats to the marine and riverine environment and promotes activities that will help protect these animals.



Figure 6: 2021 Manning River Helmeted Turtle Project participants

Students then utilise this knowledge to create an education campaign aimed at raising awareness within the school or local community about marine debris issues. Young leaders are encouraged to share their ideas for simple solutions and creative ways to communicate on this important issue. Students are encouraged to look at culprit litter items and find ways to prevent debris entering our waterways.



Figure 7: Gloucester High students cleaned up 140 tyres from the edge of the Manning River catchment and plan to implement smaller litter audits on a regular basis and contribute data to the Australian Marine Debris Initiative database.

How are we targeting waste diversion into the future?

Our Waste Services team has implemented multiple operational improvements to increase waste diversion into the future. The new Waste Facilities and Operations Contract that was awarded to JR Richards and Sons in partnership with Resource Recovery Australia in March of 2021 has been designed to deliver positive sustainable outcomes through increased concentration on waste avoidance and resource recovery activities such as increased investment in tip shops, implementing new processes and procedures at transfer stations and installing new innovative equipment to better-manage waste streams.

The team is undertaking a review of the MidCoast Waste Strategy 2030 to ensure the strategy aligns with the new Waste and Sustainable Materials Strategy 2041 released by the Department of Planning, Industry and Environment.

Future projects include a program to process food and garden Organic waste. The aim is to divert an estimated 40% of material from landfill commencing in 2025.

Managing water

MidCoast Council's peak planning documents for water supply and sewerage are the Integrated Water Cycle Management Strategy and Strategic Business Plan.

Drinking water extraction and consumption

The Nابیac Dune Aquifer Water Supply and Water Treatment Plant (WTP) were commissioned in November 2018 to augment the Manning supply and improve water security. The total cost of the project was \$34 million, including nearly \$10 million from the federal government and \$2.5 million from the NSW government.

Water is extracted from a bore field at the Nابیac Inland Dune Aquifer, treated at Nابیac WTP and supplied to the southern part of the Manning reticulation system. The plant has existing capacity of 12 ML per day of drinking water supply into the Manning Water Scheme, which is Council's largest scheme, supplying over 70,000 people. There is the potential to increase this capacity to 24 ML per day in the future if required.



Extraction from the environment and consumption of drinking water for individual supply schemes is presented in figures 8 and 9 below. Extraction volumes include water extracted from rivers and groundwater and volumes required for treatment, such as filter backwashing. Consumption volume is the amount of water pumped from water treatment plants to the distribution system and on to customers' taps. Extraction rates do not always equal consumption rates due to volumes of water held in off river storages and supplementary runoff from the catchment to these storages.

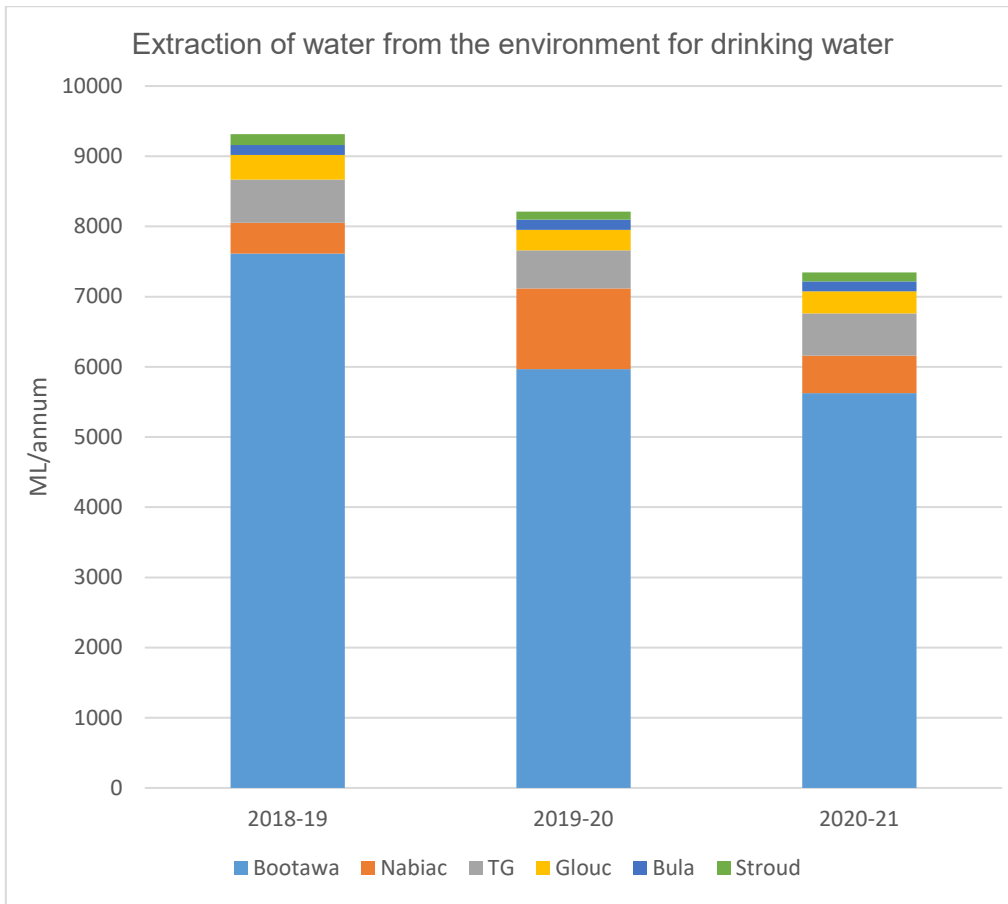


Figure 8: Extraction of water from the environment for drinking water

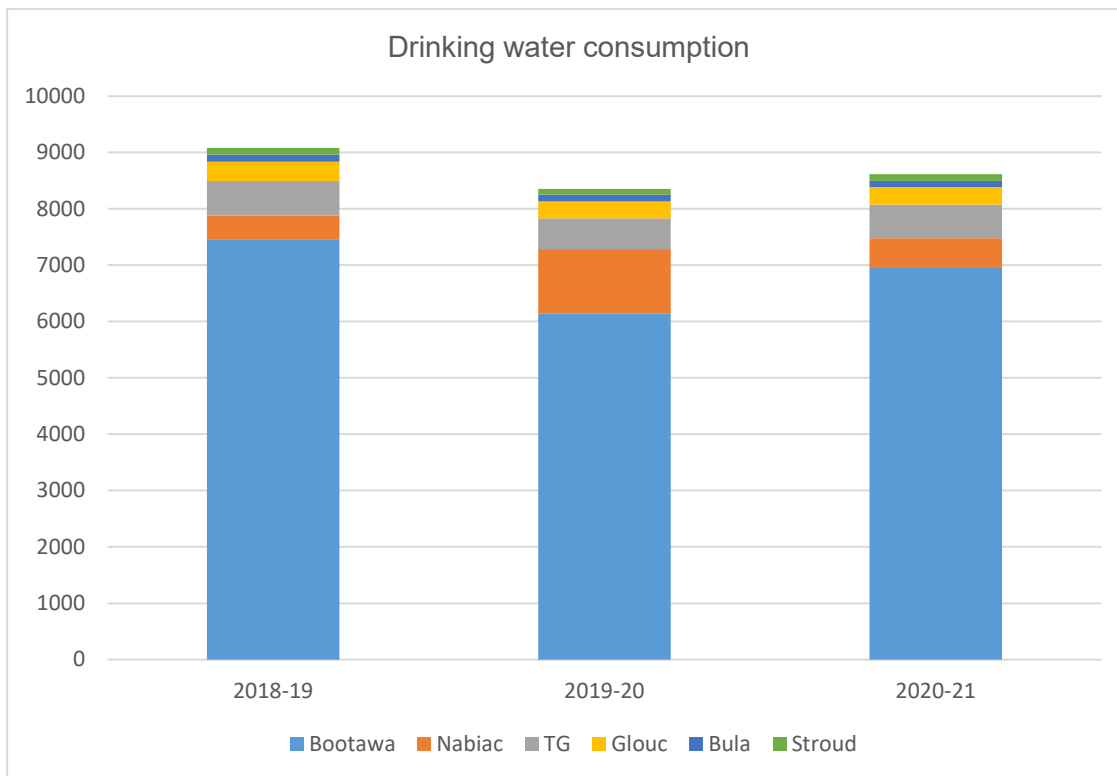


Figure 9: Drinking water consumption

Council has continued our commitment to water saving with the recruitment of a Water Resilience Officer in early 2021, installation of smart water meters, leakage reduction and education.

In order to meet our commitment to support business and institutional customers, the Water Resilience Officer has been working with some of Council’s largest water users including several caravan parks to promote a shift in the way water is valued and used. Smart meters were identified as an effective tool for reducing water use and they have been installed at the sites of selected large users at no cost to the customer to reduce water loss and give customers greater control over their water use. The smart meters provide early leak detection to customers through detection of abnormal use followed up with an email or text alert. Several large leaks have already been identified and fixed in the first half of 2021 with an estimated 26 million litres of water being saved.

Drinking water quality

We continue to supply safe drinking water to our customers in line with the Australian Drinking Water Guidelines. Drinking water is regulated by NSW Health. The following graph shows water quality results within Australian Drinking Water Guidelines over the past five years.

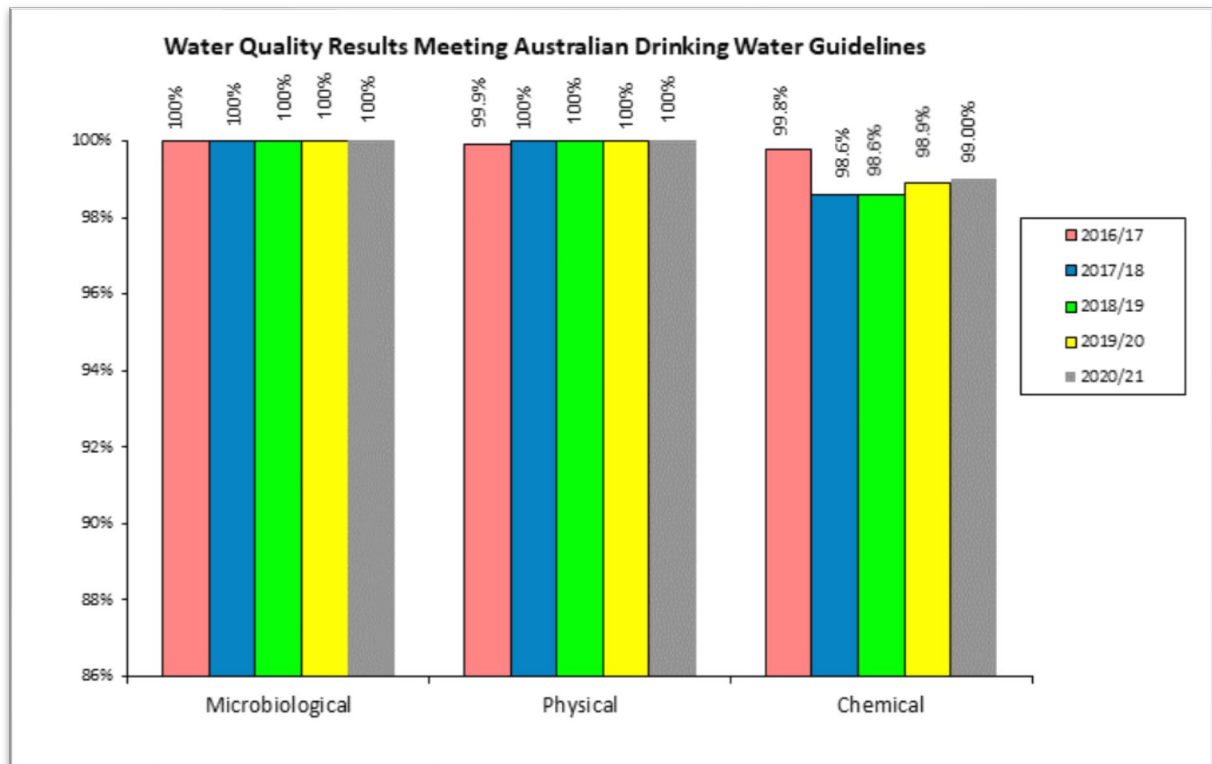


Figure 10: Drinking water quality



Effluent management and recycling

Water is extracted from the environment, treated at water treatment plants and supplied to customers as drinking water. Once water has been used by customers, it is referred to as wastewater. This is treated at sewage treatment plants and treated effluent is returned to the environment or recycled for beneficial reuse.

Council aims to return treated effluent with no harm to the water cycle by the most appropriate, sustainable and community-acceptable method. Each town and village has different opportunities and constraints for effluent management and recycling.

Generally, the range of effluent management alternatives available depends on the proximity to adjoining activities and geographical features. Current effluent management options in our area consist of:

- beneficial reuse or recycling (eg irrigation on agricultural land or recreational areas, roadworks or stock watering)
- direct release into the environment (eg river or ocean)
- groundwater recharge (eg effluent released to coastal sand dunes).

Other opportunities for recycling are being investigated for long term options as part of our Integrated Water Cycle Management Strategy, including aquifer recharge and purified recycled water for drinking.

Volumes of water returned to the environment are presented in the figure below. The volume of wastewater treated at sewage treatment plants and reused fluctuates depending on weather patterns, especially rainfall. During periods of low rainfall, there is less wastewater to treat and more opportunities for reuse. Wet years present challenges for reuse including less opportunities to provide water for irrigation.

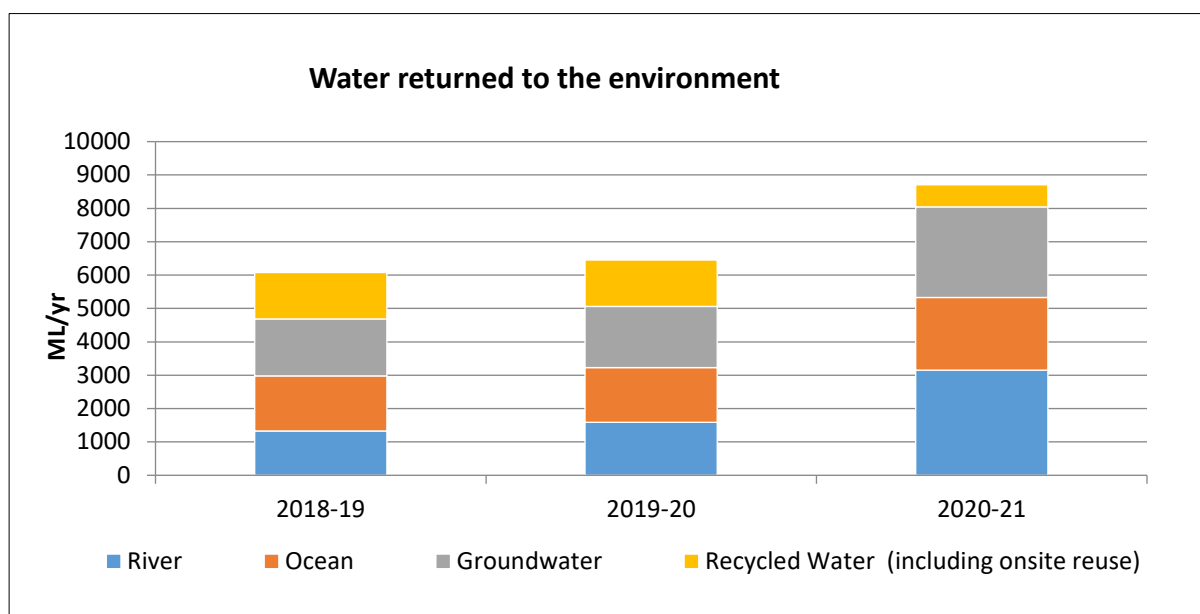


Figure 11: Volumes of water returned to the environment

Ten of our treatment plants provide recycled water for beneficial reuse. Individual usage is provided in the figure below.

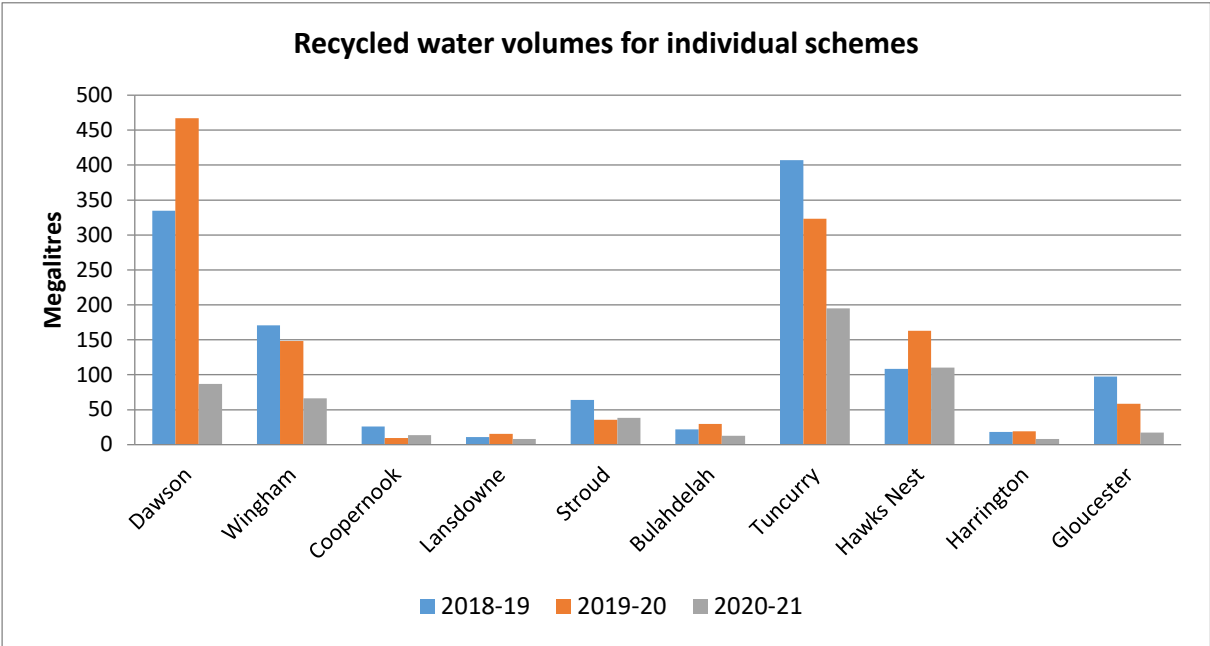


Figure 12: Recycled water volumes for individual schemes

Environmental monitoring program

Sustainable management of the water cycle requires knowledge of the current situation from catchments to customers’ taps. It is also important to monitor water quality in the receiving waters as it is returned to the environment. The information captured is used to:

- Inform day-to-day operations of water and sewage treatment plants
- Meet regulatory requirements
- Assess trends or changes in customer needs and the needs of the environment
- Improve our planning decisions

We collect the following data for water, sewer and recycled water operations:

- Raw water (rivers and groundwater) and treated water (after water is treated at water treatment plants) quality
- Water meter usage
- Service area bulk meters
- Reservoir levels
- Pressure meters
- Water quality within the drinking water distribution systems including customers’ taps and public areas
- Sewage treatment plant inflows and outflows
- Influent and effluent quality at sewage treatment plants
- Sewage pump station hours run
- Rainfall

- Water quality and quantity through all stages of recycled water treatment
- Receiving waters in the environment, eg rivers, ocean, groundwater
- Water quality sent to end users for beneficial reuse, eg irrigation, roadworks and stock watering

Water quality monitoring and reporting requirements for water, sewer and recycled water operations are regulated by the following authorities:

- NSW Health
- NSW Environment Protection Authority
- NSW Department of planning, Industry and Environment
- Water NSW
- NSW Department of Natural Resources Access Regulator
- Local Government NSW

Monitoring of pollutant loads released into the environment from sewage treatment plants are presented below. Along with plant performance, discharge loads are also influenced by climatic conditions. Increased rainfall periods increase inflows, reduce recycled water demand and therefore increase discharge volumes and corresponding loads. The increase to discharge loads for the year 2020-21 is associated with wetter than normal climatic conditions, as demonstrated by increased inflows.

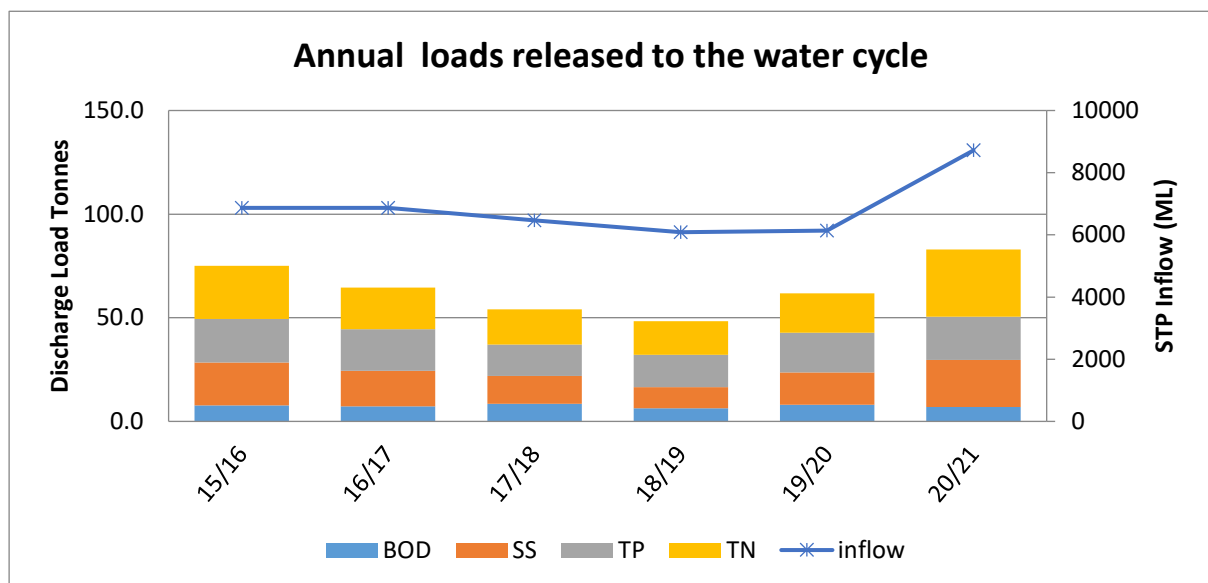


Figure 13: Annual loads released to the water cycle

Each sewage treatment plant has an Environment Protection Licence. A summary of compliance with these licences is shown in the figure below.

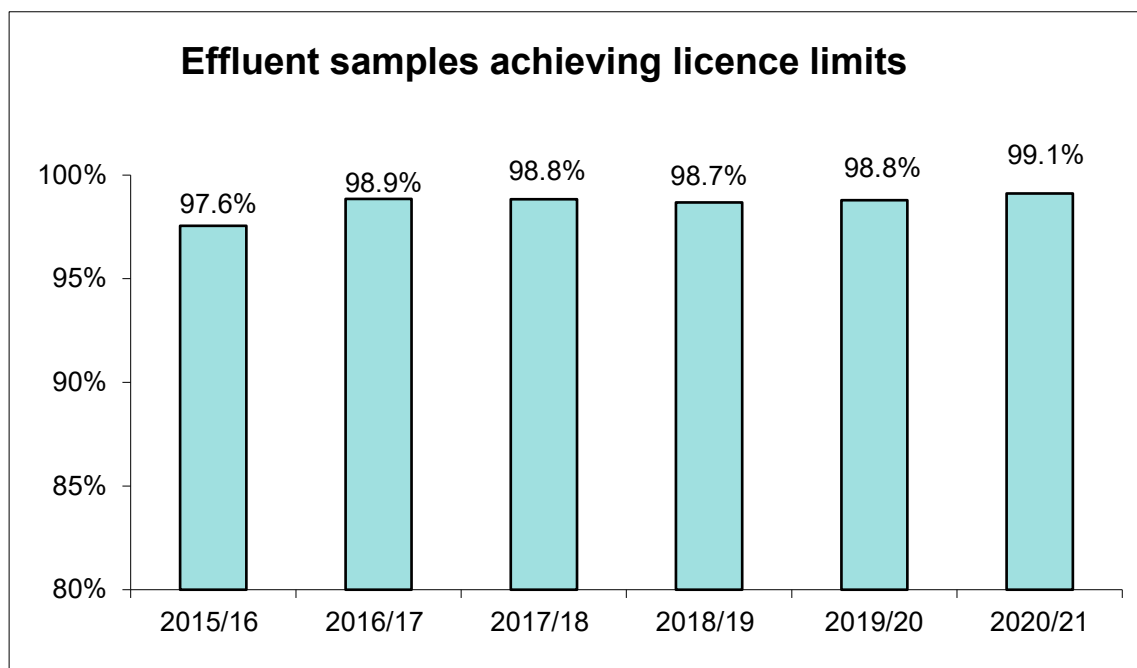


Figure 14: Effluent samples achieving licence limits

Biosolids reuse

Sewage contains several natural qualities which can be utilised as a resource. Not only can the liquid component of treated effluent be reused as ‘fit for purpose’ recycled water, the solid component is rich in essential nutrients that can be suitable for use as a fertiliser. Biosolids reuse is cost effective, environmentally sustainable and safe from a public health perspective. It is regulated by NSW Environment Protection Authority and other government bodies.

One hundred percent of biosolids generated in sewage treatment processes across the MidCoast area is reused on agricultural land each year.

Major grants secured

Major grants (over \$100,000) secured to improve resource management from July 2018 – June 2021 are shown in Table 7 below.

Project Name	Grant Amount (ex GST)
Drought relief - water supplies, NSW State Government	\$8,500,000
Stroud Community Recycling and Transfer Centre	\$168,457
Total major grant value	\$8,668,457

Table 6: Grants over \$100,000 secured for resource management

Our indicators

The Community Strategic Plan 2030 has two indicators for this goal, relating to reduced carbon emissions and diversion of waste to landfill.

Reduction in annual carbon emissions

While a baseline emissions profile has been undertaken for Council, trends have not been able to be accurately determined due to the Council amalgamation and the merger of assets, and the differing accounting and monitoring systems currently in place to measure energy and fuel consumption. In 2021 assets have been consolidated within a single monitoring system (Azility) to enable Council to better measure its progress towards meeting the emission reduction targets set under the recently adopted Climate Change Strategy.

Waste composition report

Figure 15 shows weekly generation of the general waste stream in the 2021 audit period compared with previous audits. The data across all periods shows food waste in the general waste bin as the highest material by weight at 2.3 kg per household per week. Recyclables weight in general waste bins held steady between 2017 and 2021 at 0.7 kg per household, and decreased from 1.5 kg in 2014. There was a slight increase in garden organics from 0.1 to 0.3 kg per household between 2011 and 2021. There is a marked increase in containerised food from 0.3 kg per household in 2011, 0.5kg in 2017 to 0.9kg in 2021. There is a decrease in nappies and hygiene material and other plastics and an increase in inert and other material.



Figure 15: General waste generation – trends (APC 2021)

Who helped us?

A range of agencies, community groups and stakeholders helped Council achieve our goals to manage resources wisely. They included:

- NSW DPIE - Sustainability Advantage Program
- NSW Environmental Protection Authority
- Azility
- Manning Water Users Association
- Take3 for the Sea
- Hunter Local Land Services
- Taree Indigenous Employment & Development
- Schools across our region

4 We balance the needs of our natural and built environments

Council has three sets of planning controls – one for each of the three former regions – which can make planning inconsistent across the MidCoast. We have been working on a MidCoast-wide land use plan, which will provide a clear, consistent planning framework to guide the way we manage land use across the entire region, now and into the future. We have been developing strategies, reviews and plans with our community.

Our activities

Many of the strategies, reviews and plans form part of the *Zoning In on our Future* project. We have finalised our community engagement for the urban areas and will be consulting on plans for rural areas in late 2021.



Zoning In - urban

Council has examined urban areas with our region, being our towns and villages. We developed a MidCoast Housing Strategy, outlining a residential framework for many different neighbourhoods. Zone reviews provided a consistent planning approach for where we work and shop, recreation and environmental areas and important infrastructure including the railway, airport and hospitals. We also focused on the Manning Health and Taree CBD precinct, an important area for employment and residential growth.

Council checked-in with the community from 5 February until 9 April 2020, seeking feedback on the future zones for MidCoast towns and villages. We received important community feedback and amended our strategies and reviews to reflect this feedback, before finalising this work in December 2020. This work will guide the development of the new MidCoast Local Environmental Plan and Development Control Plan.

Zoning In - rural

The Rural Strategy applies across the rural and natural landscapes that surround our towns and villages. It is characterised by a mixture of productive farmland, waterways and a well-vegetated hinterland providing important biodiversity values.

Rural and natural landscapes cover over 98% of the MidCoast, and comprise 75% rural lands, 25% environmental lands and 1.5% waterways. These landscapes house approximately 5% of our population.

We will check in with the community about the Rural Strategy in late 2021. After consideration of submissions, the Rural Strategy will guide the development of the new MidCoast Local Environmental Plan and Development Control Plan.

Local Strategic Planning Statement

The 20-year land use vision for the MidCoast is set out in the Local Strategic Planning Statement (LSPS). It outlines how growth and change will be managed to maintain the high levels of liveability, environmental amenity and rural character that the MidCoast is renowned for.

The LSPS identifies ten planning priorities to achieve the vision, along with short, medium, long term, and ongoing actions to monitor and report on the progress of implementation. Based on the key values set out in MidCoast 2030: Shared Vision, Shared Responsibility, the LSPS aligns with the aspirations of our community. The MidCoast Local Strategic Planning Statement was adopted on 23 September 2020.

Greening Strategy

The greening of the MidCoast adds to the liveability and environmental amenity of our towns, villages, and rural and natural landscapes – it's an integral part of the natural environment valued by our community.

To support this, Council has developed a Greening Strategy that aims to manage and enhance tree canopy cover and green spaces across the region, with a focus on urban areas. The Strategy sets out a forward-thinking plan of action for greening that prioritises specific locations according to what is needed.

The MidCoast region is large and we have limited resources. In order to focus our efforts for the most effective outcomes, the Greening Strategy identifies five key areas or 'principles' and actions that can be undertaken to achieve those outcomes.

- Cooling our urban areas
- Keeping what we have
- Building partnerships
- Right trees in the right place
- Planning for the future.

The MidCoast Greening Strategy was adopted on 28 July 2021, and work is underway to implement the agreed actions.



Vegetation Management Policy

As part of developing the first draft Greening Strategy for the MidCoast, Council identified the need for targeted vegetation management in areas across the region that contribute to:

- significant ecological values, by maintaining key habitats and linking corridors to enable fauna movement
- landscape character and amenity, as some locations are renowned for their 'leafy' character, while others provide a vegetated landscape on entry into our towns and villages

Mapping was undertaken to identify the target areas, and a simple 3-step application process was developed and included in the Vegetation Management Policy. The MidCoast Vegetation Management Policy was adopted on 28 July 2021, and work is underway to implement the Policy.

Major grants secured

No grants over \$100,000 were secured.

Our indicators

In the Community Strategic Plan 2030, the Land Use Planning indicator is: "*The community is satisfied with land use planning decisions.*"

The 'Zoning In' consultation was extensive with over 1,200 people having conversations with Council staff and 9,249 visits to the 'Know your Zone' project page on our website. Most submissions resulted in changes to the 'Zoning In' documents, which is a positive outcome for the community.

In addition, 83 people surveyed indicated they generally had a positive experience, for example:

- 92% of participants felt better informed about the proposed changes after coming to the drop-in session as a result of the way the consultation was facilitated
- 93% felt that they had the opportunity to have their say

Who helped us?

- NSW Department of Planning, Industry and Environment

5 Conclusion

The MidCoast region is a place of unique environmental significance. Our community enjoys experiencing beautiful natural heritage from the mountains to the sea. Through the Community Strategic Plan 2030, we agree that protecting our natural environment means using resources wisely and balancing the needs of our natural and built environments.

The period from July 2018 to June 2021 covered by this State of the Environment Report posed numerous challenges for Council and our community. These included managing water supply during the worst drought on instrumental record; losing 20% of the region to bushfires; displacement, erosion and inundation from the 2021 flood and working within the constraints of COVID-safe work practices.

Despite these challenges, Council continued to address the environmental goals set out in the Community Strategic Plan 2030. Council's projects as described in this report have ensured that our natural environment is protected and enhanced, while we maintain our growing urban centres and manage resources wisely.

