

state of environment report 2021



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STATE OF ENVIRONMENT REPORT 2021

This document has been created using an interactive format. There are links embedded throughout that can be used to navigate to different parts of the document, or to other pages on the internet, when viewed on a computer or mobile device.

About the State of Environment 2021

This State of Environment reporting provides an overview of Cairns Regional Council's environmental and urban sustainability initiatives and performance in 2020/21, including data updates from the 2019/20 period. The report shows the conditions of the local environment, the pressures on the environment and responses to those pressures - an approach commonly used in State of Environment reports.

While State of Environment reporting is not a statutory requirement of local governments in Queensland, Cairns Regional Council considers this to be best practice. This is the 15th release of the report, and the first since moving to an interactive online format. Both the [Queensland Government State of Environment](#) and [Australian Government State of Environment](#) reports can be accessed online for further information at wider bioregional and national levels.

The report does not provide a complete summary of work done by other agencies in local catchments within the Cairns Local Government Area boundary. Further information on these agencies can be found on the relevant websites, and many are linked to from within these pages.

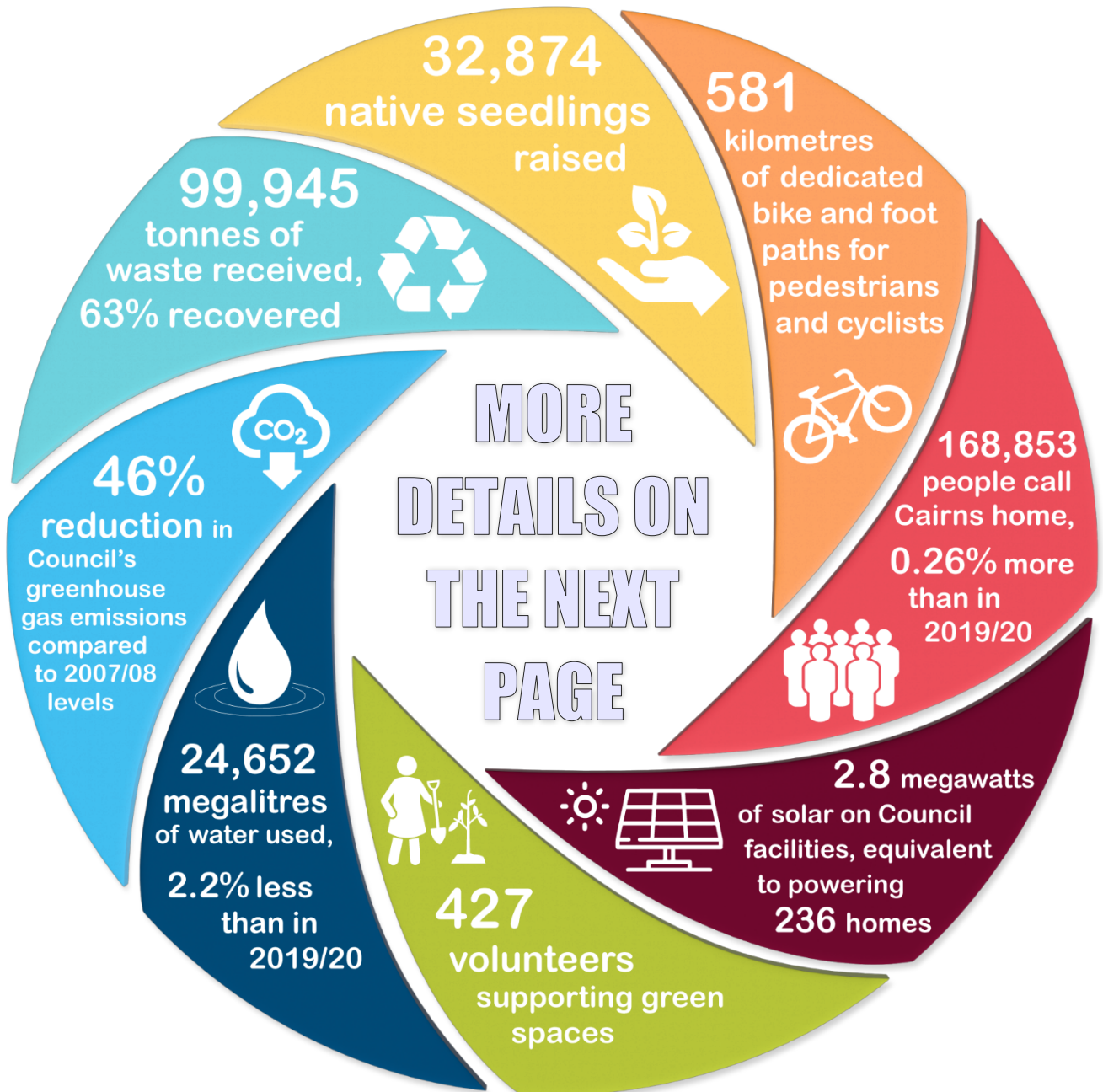
Links to the publicly available sources of the data used in this report can be found in the [Cairns Regional Council State of Environment 2021 Resource List](#).

Disclaimer

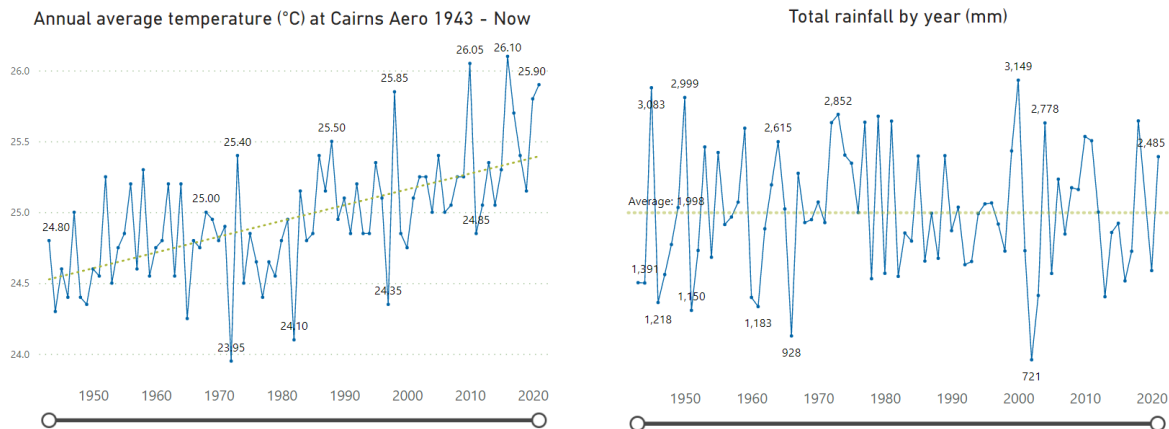
This report has been produced by Cairns Regional Council and endorsed at the Planning and Environment Committee meeting on 10 August 2022.

Please note that while every effort has been made to ensure that the information contained within this report is correct and up to date, Cairns Regional Council and all persons acting on its behalf in preparing this report accept no liability for the accuracy or inferences from the material contained in this publication, or for any action as a result of any person's or group's interpretations, deductions or conclusions relying on this material. Cairns Regional Council accepts no liability for any loss, damage or injury (including 2021 consequential loss, damage or injury) from the use of this information.

State of Environment Snapshot 2021



Climate



Click on the graphs to view the interactive versions on the Cairns Regional Council website.

Pressures

In the years since records began in 1942, average daily air temperatures at the Cairns Aero Station have increased by about 1 °C. 2020/21 was close to an average year, with an average annual maximum of 29.1 °C and an average minimum of 21.4 °C. Although the frequency of extreme heat events is increasing Australia-wide, there were only two days over 35 °C recorded at the Cairns Aero Station in 2020/21, below the average of 3.3 days per year.

An increase in the duration of hot, dry periods has resulted in increased bushfire risks for much of Australia. Far North Queensland was spared the worst of the bushfires that ravaged the east coast of Australia in 2019 and 2020, but still endured a large blaze north of Mareeba which destroyed a home and threatened several more.

Despite being a relatively mild year on land, 2020 saw a marine heatwave that caused the Great Barrier Reef's third mass coral bleaching event in five years. Sea levels are also rising, and the ocean is acidifying, increasing the risk of inundation and damage to coastal infrastructure.

Response

Click the titles of the responses below to find more information on the Cairns Regional Council website.

Climate Change Strategy 2030

To address climate pressures Council began developing the [Climate Change Strategy 2030](#), which outlines our actions to reduce greenhouse gas emissions, transition to a low carbon economy and adapt to a changing climate. In 2019 and 2020, Council underwent a large-scale public consultation process to better understand the values and concerns of residents and key stakeholders.

Coastal Hazard Adaptation Strategy

Using climate data and the [0.8 M sea level rise mandated by the Queensland Government](#), Council has developed [Our Cairns Coast](#), a strategy outlining proposed measures to address coastal hazards in the region between now and 2100.

Reef Guardian Action Plan

[Reef Guardian Councils](#) supports participating councils to play an active role in protecting the Great Barrier Reef. The stewardship program led by the Great Barrier Reef Marine Park Authority describes actions Cairns Regional Council is taking.

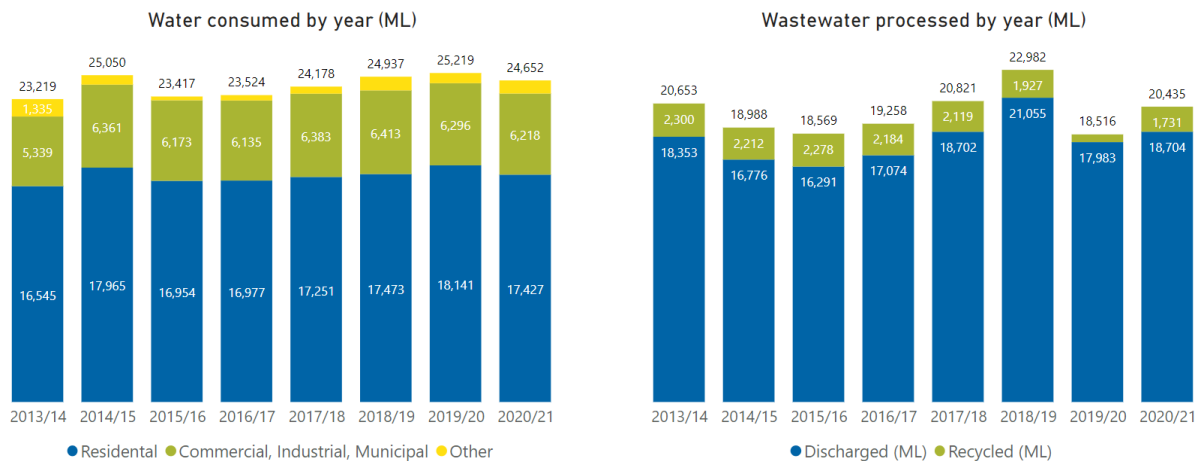
Further information
[Bureau of Meteorology State of the Climate 2020](#)

[Bureau of Meteorology Datasets](#)

[Cairns Carbon Emissions Snapshot](#)

[GBRMPA Coral Bleaching 101](#)

Water



Click on the graphs to view the interactive versions on the Cairns Regional Council website.

Pressures

The Cairns LGA sits within two major river drainage basins, the Barron and Russell-Mulgrave, with more than 90km of wetlands, nine of which are of national importance. These support biodiversity, filter sediment, provide recreational and cultural values and protect against extreme climate events such as storm surges and floods. These basins flow into the Great Barrier Reef catchment, which is internationally recognised for its exceptional biodiversity.

[Cairns' water is sourced from 10 rainforest locations](#) before being processed at Council's treatment plants and stored for use in reservoirs across the region. Water consumption in Cairns has remained relatively consistent, despite a steadily growing population. On average, Cairns residents are using a little less water each year per person.

Council supplied 24,652 megalitres of water and processed 20,435 megalitres of wastewater in 2020/21, recycling 1,737 megalitres for applications such as the Botanic Gardens and golf courses.

Pressures on waterways can typically include water extraction rates, the quality of effluent and stormwater, habitat disturbance, invasive species and unsustainable fishing. Council manages water extraction for drinking water purposes, wastewater treatment processing and resource recovery within statutory guidelines to ensure pressures on the region's environment remains minimal.

Response

Click the titles of the responses below to find more information on the Cairns Regional Council website.

Smart Water Meters

Phase 1 of Council's Smart Water Meters (SWMs) project was completed at the end of 2019, with the installation of 697 SWMs in Palm Cove and the development of approximately 50% of the associated communications network. SWMs are a digital device that measures, in real time, the amount of water

in use and transmits the data to Council for processing. They can help save water through early leak detection and by identifying patterns in water usage. Since the smart meters were installed at Palm Cove, Council estimates about 10 megalitres of water have been saved.

Smart Catchments

Environmental sensors are installed in Saltwater Creek to monitor, in near real-time, the quality of water flowing through the catchment into the receiving waters of the Great Barrier Reef lagoon.

Our water security

The Cairns Water Security - Stage One project is crucial to the future growth and prosperity of the region. The plan involves sourcing water from a strategic reserve in the Mulgrave River, which will be less expensive and have a lighter environmental footprint than a dam.

Further information

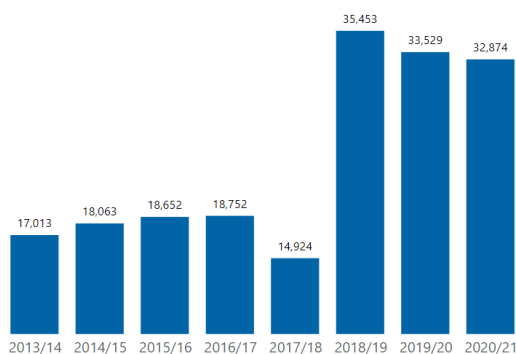
[Cairns Region Water Usage Data 2020/21](#)

[Water Demand Strategy 2016-2025](#)

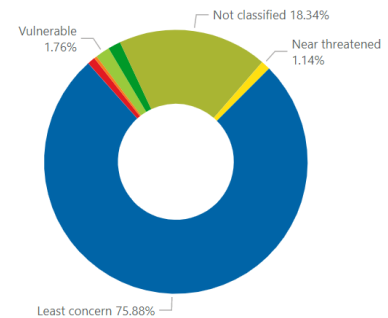
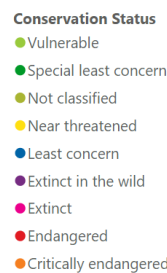
[Annual Drinking Water Quality Report 2020-21](#)

Biodiversity

Number of seedlings raised by Council nursery for revegetation works by year



Species found in Cairns, grouped by Qld conservation status



Click on the graphs to view the interactive versions on the Cairns Regional Council website.

Pressures

[Queensland Government Remnant Vegetation surveys](#) show that close to 68% of vegetation cover remains in the Cairns LGA, with this figure being close to constant since 2013.

Pressures on biodiversity come from land clearing, pollution, domestic animals, vehicles strikes, roads fragmenting habitat connectivity, and climate change. The 70,000 additional residents projected to join the region in the next 20 years represent further indirect pressures.

Response

Click the titles of the responses below to find more information on the Cairns Regional Council website.

Feral animals

Council and landowners have responsibilities regarding regional management of pest animals. The Cairns Region Biosecurity Plan is a guiding document for managing biosecurity in the region, providing strategic direction for the management of invasive biosecurity matter and other priority pests.

Flying-foxes

Council works with wildlife experts, carers and staff to address flying-fox management issues in urban areas with the aim of balancing protection of spectacled flying-foxes and the amenity of residents.

Green Space Our Place volunteers

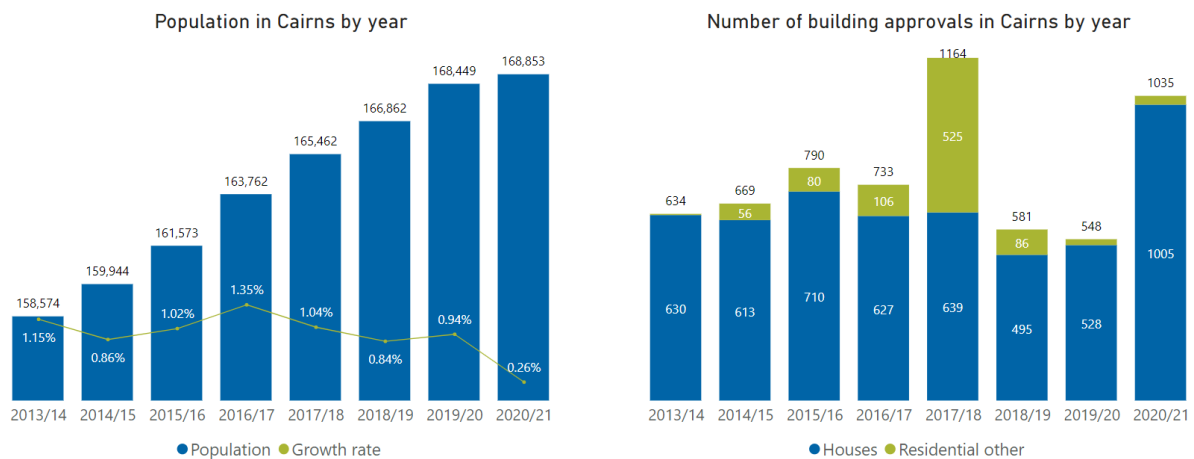
Green Space Our Place has 10 supervised groups that meet regularly to work alongside our volunteer supervisors to learn new skills, develop their understanding of plants and meet like-minded members of the community. Get involved and contribute to the improvement and upkeep of the region's open spaces.

Further information

[WildNet Species Profile Search](#)

[Queensland Government Remnant Vegetation Cover](#)

Built Environment



Click on the graphs to view the interactive versions on the Cairns Regional Council website.

Pressures

The population in Cairns grew by an estimated 439 residents in 2020/21 to 168,853. A reversal in international migration in recent years contributed to Cairns population growth rate slowing to 0.26%, a significant decrease from the pre-Covid average of 1.03%.

Growth in the built environment can be associated with pressures such as an increased urban footprint encroaching on ecosystems, waste generation, air pollution and greenhouse gas emissions, waterway pollution and increased demands on fresh water sources. Even if appropriately managed, population increases can act as a force multiplier on these pressures.

As a popular tourist destination, Cairns typically has an average of 31,000 visitors per day, which adds further pressure. However, due to travel restrictions and state and national border closures brought about in response to the Covid-19 pandemic, Cairns saw a drastic reduction in tourist visitations throughout much of 2020 and 2021. Many economic and environmental indicators are thought to have been affected by the Covid-19 restrictions.

Response

Click the titles of the responses below to find more information on the Cairns Regional Council website.

Tropical building design

Designing for the tropics is essential in our climate. Use our resources to help design a home or building that responds to our environment, climate, local character and community needs, including the [Designing for Density in the Tropics Design Guide](#).

TreePlotter database

Council is aiming to plot every tree on Council land, but with an estimated 500,000+ trees in the Cairns region's parks and streets, mapping them all is a big job. Council's arborists, contractors and volunteers have plotted more than 30,000 trees already, and you can help too.

Green Space Our Place volunteers

Green Space Our Place has 10 supervised groups that meet regularly to work alongside our volunteer supervisors to learn new skills, develop their understanding of plants and meet like-minded members of the community. Get involved and contribute to the improvement and upkeep of the region's open spaces.

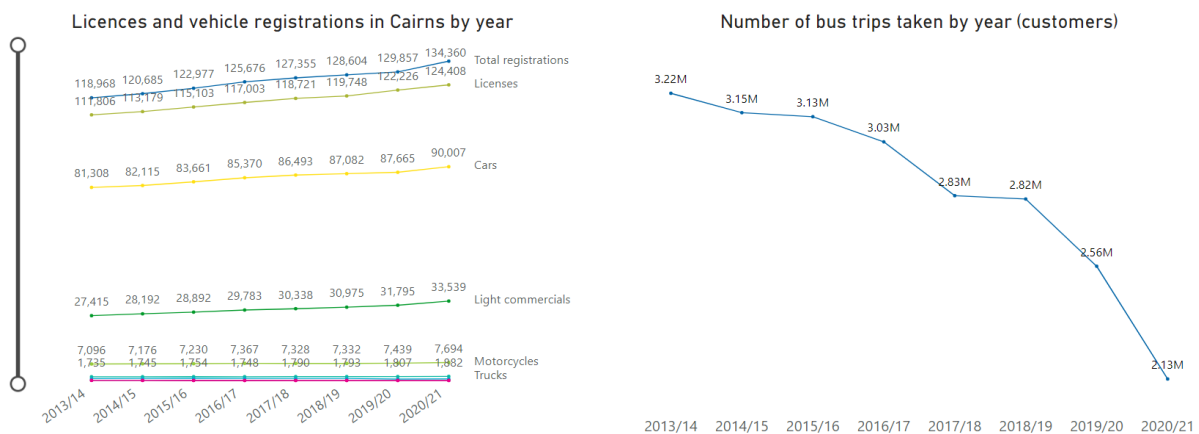
Further information

[.id Cairns Economic Profile - Population](#)

[Solar Power Systems Installed In Cairns](#)

[COVID-19 Cairns Local Recovery Plan summary](#)

Transport



Click on the graphs to view the interactive versions on the Cairns Regional Council website.

Pressures

Personal motor vehicles remain a very popular choice of transport for Cairns' residents, with an average of 1.08 vehicles for every driver. Cairns' preference towards personal fossil fuel-based vehicles contributes to noise and air pollution, including the release of greenhouse gases. In some cases, the creation of new roads may also place pressure on native species through habitat fragmentation, along with risks of weed dispersal and vehicle strikes.

Public transport (bus) usage has trended down over time, though there appears to have been the beginnings of a levelling out in 2018/19 until Covid-19 restrictions such as social distancing and lockdowns kept people indoors.

Response

Click the titles of the responses below to find more information on the Cairns Regional Council website.

Active Transport Strategy

The Cairns active transport network is extensive, with over 660 km of footpaths, shared paths and on-road bicycle lanes connecting the south and west to the Cairns CBD. The Active Transport Strategy provides a clear and coordinated approach to planning and developing future region-wide additions to the walking and cycling networks by identifying missing links and proposing future networks.

Cairns Electric Vehicle Charging Stations

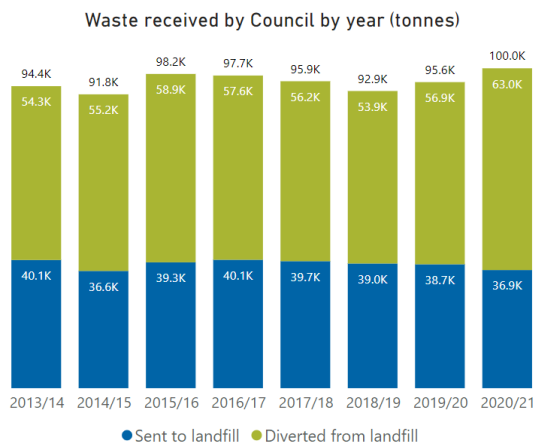
[My Electric Vehicle](#) is a community information resource for electric cars & vehicles (EVs) in Australia. Among other information, they provide an interactive map detailing the locations of EV charging stations all over Australia. Some of these stations form part of [Queensland's Electric Super Highway](#). With the increasing popularity of electric and other zero emissions vehicles in Australia, the Queensland Government have committed to increasing the availability of [charging stations throughout the state](#).

Further Information

[Queensland Government Cairns Regional Bus Patronage](#)

[Queensland Department of Transport and Main Roads Registration Data](#)

Waste and Recycling



Click on the graphs to view the interactive versions on the Cairns Regional Council website.

Pressures

Waste generation and disposal typically has significant social, economic and environmental impacts within the municipality and across the supply chain. Council receives waste at four major facilities. Three smaller private waste disposal facilities also operate in the Cairns LGA, but their data have not been included here - Only domestic waste tonnes received by Council are included in this report.

A total of 99,945 tonnes of waste was received by Council in 2020/21, an increase of 4.6% on the previous year. Despite this recent increase, however, a wider view of the data reveals the Cairns residential population has increased by 6.5% since 2013/14, indicating a 3.3% reduction in waste generated per person over the longer term.

Council receives waste primarily through [kerbside collected waste and recycling bins](#) and through the [transfer station network](#). The overall resource recovery rate (diversion from landfill) was 63%, an increase of 3% from the previous year.

Regular audits are conducted to track kerbside waste and recycling bin composition. These audits show that across the Cairns LGA the amount of recycling placed in residents waste bins was greater than the amount that is placed in the recycling bins. Approximately 9,000 tonnes of recycling is incorrectly placed in waste bins and sent to landfill each year.

Response

Materials Recovery Facility

Council's \$14.3 million Materials Recovery Facility was officially opened in May 2021. It handles up to 30,000 tonnes of recycling each year with an average 85% recovery rate, a 26% increase over the former rate. The facility includes a new shed, a glass-sorting and processing plant, and an education room.

Clean Up Cairns

A month of community clean-ups to help remove the litter from our parks and streets before the wet season washes it out to sea. Let's protect the Reef from plastic pollution! Join a community clean-up in a suburb near you this September.

Waste strategy

Council's Waste Reduction and Recycling Strategy 2018-2027 takes a circular approach to the waste hierarchy with the aim of keeping waste materials at their highest value in the economy for as long as possible, rather than being seen as having no value and buried in landfill.

Single Use Plastics Policy

Council is committed to reducing single use plastics and demonstrating leadership on this issue. We acknowledge the impacts that plastic pollution poses and the costs that are borne by Council and the community. Additionally, Council encourages the avoidance of unnecessary plastic waste through partnership with [Plastic Free Cairns](#), who has signed up over 100 local businesses to its program.

Waste education

Council's Waste Education Officer engages with the community through a range of events, programs and partnerships to influence positive waste and recycling behaviours. Our [Waste Education Program](#) provides services to help Cairns schools and community groups reduce, reuse their waste and recycle right. These include [presentations for students, teachers and community groups](#), free [Waste & Resource Recovery facility tours](#) (via the Rediscovery Centre) and free school recycling services.

Cairns Litter & Illegal Dumping Action Plan

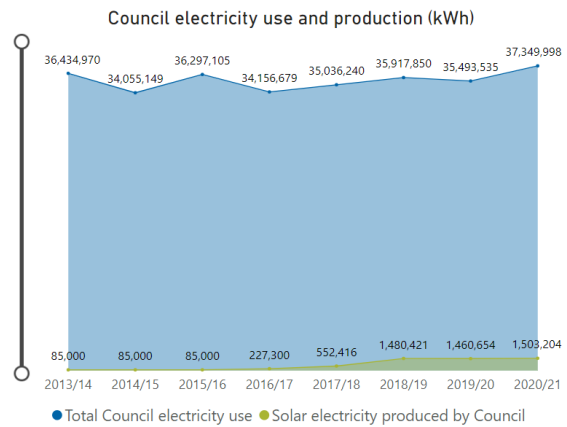
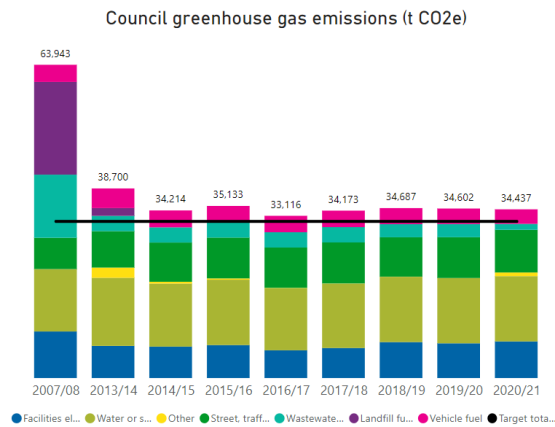
The [Cairns Regional Council Litter and Illegal Dumping Action Plan](#) sets goals and associated actions to address litter and illegal dumping through infrastructure, education and enforcement. Council ran a nine-month program from July 2020 to May 2021 which responded to a total of 468 reports of illegal dumping, constituting almost 600 tonnes of waste.

Further information

[CRC A-Z of Waste](#)

[Materials Recovery Facility Virtual Tour](#)

Council Operations



Click on the graphs to view the interactive versions on the Cairns Regional Council website.

Pressures

Council manages a range of services, programs and infrastructure on behalf of the community. This includes community infrastructure (like parks, sporting fields, footpaths etc.), arts and cultural services (libraries, events, performing and visual arts facilities), sewerage and wastewater treatment, water supply, waste collection, disposal and recycling, cemeteries, animal management, town planning, building approvals local roads, kerbing and drainage. More information is available in [Council's 2020-2021 Annual Report](#).

Total fuel consumed by Council vehicles decreased to the lowest it has been in the last eight years, with a 2.5% drop from 2013/14 levels.

Council greenhouse gas emissions have been trending upwards since 2016/17. Although Council saved approximately 3,600 tonnes of emissions through the installation of solar panels on Council facilities, generating 2.8 MW of electricity, these savings have not decreased Council's overall emissions. Council's total electricity use was 37,350 MWh in 2020/21, with the higher usage level largely attributable to large scale capital works projects, increased facilities electricity use, and additional street, traffic and public lighting.

Water used by Council is significantly above average, with a 53% increase on the previous year.

Response

Renewable Energy

Council has installed nearly 3 megawatts of solar power across its facilities. These systems generate over 4.5 gigawatt hours of renewable energy each year, saving over \$700,000 and 3,600 tonnes of CO2e (greenhouse gas emissions) annually.

Further information

[Cairns Regional Council 2020-2021 Annual Report](#)

[Cairns Region Water Usage Data 2020/21](#)



Data tables

Average air temperature

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Average maximum (°C)	29.2	29.9	29.7	25.7	29.7	29.9	29.8	29.1
Average minimum (°C)	21.1	20.9	19.7	21.8	21.2	21.2	20.9	21.4
Overall average (°C)	25.2	25.4	24.7	23.8	25.5	25.6	25.4	25.2
Days over 35 °C	0	5	6	5	2	15	8	2

Rainfall

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Annual rainfall - Cairns Aero (mm)	2,010.0	1,501.6	1,452.4	1,578.3	2,288.2	1,875.0	1,206.0	2,538.6
Annual rainfall - Babinda Post (mm)	4,708.5	2,959.0	3,659.8	3,049.0	4,870.4	3,274.2	3,017.7	4,506.2

Water consumed

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Residential (ML)	16,545.0	17,965.0	16,954.1	16,977.0	17,250.6	17,473.3	18,141.2	17,427.4
Commercial, industrial, municipal (ML)	5,338.9	6,360.5	6,173.0	6,134.6	6,393.3	6,413.2	6,295.7	6,217.6
Other (ML)	1,334.7	724.9	289.8	412.6	544.4	1,050.3	781.9	1,006.9
Total (ML)	23,218.5	25,050.4	23,416.8	23,524.2	24,178.3	24,936.7	25,218.8	24,651.9



Wastewater processed

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Total volume treated (ML)	20,653.4	18,944.0	18,569.7	19,257.5	20,821.2	22,981.7	18,515.8	20,435.0
Percentage recycled	11.1	11.6	8.2	8.8	9.8	8.4	2.9	8.5
Percentage discharged	88.9	88.4	91.8	91.2	90.2	91.6	97.1	91.5

Species found in Cairns, by Queensland conservation status

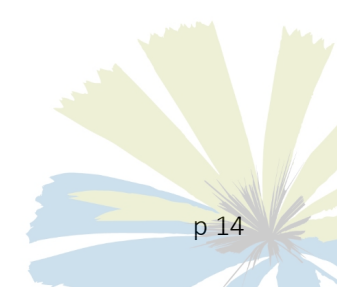
Least concern	Special least concern	Near threshold	Vulnerable	Endangered	Critically endangered	Extinct in the wild	Extinct	Not classified
2,983	61	45	69	37	14	1	0	721

Seedlings raised by Council for revegetation works

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Number of seedlings raised	17,013	18,063	18,652	18,752	14,924	35,453	33,529	32,874

Population of Cairns

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Resident population	158,574	159,944	161,573	163,762	165,462	166,862	168,449	168,853
Average visitor population	27,923	26,453	28,506	27,033	28,226	31,796	23,719	16,038





Number of building approvals

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Houses	630	613	710	627	639	495	528	1,006
Residential other	4	56	80	106	525	86	20	30

Vehicle registrations

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Cars	81,308	82,115	83,661	85,370	86,493	87,082	87,665	90,007
Trucks	1,735	1,745	1,754	1,748	1,790	1,793	1,807	1,882
Prime movers	260	251	225	230	243	262	255	260
Buses	955	1,031	1,057	1,037	1,022	1,018	751	826
Mobile machinery	199	175	155	141	141	142	145	152
Motorcycles	7,096	7,176	7,230	7,367	7,328	7,332	7,439	7,694
Light commercial vehicles	27,415	28,192	28,892	29,783	30,338	30,975	31,795	33,539
Total vehicles	118,968	120,685	122,977	125,676	127,355	128,604	129,857	134,360
Cars	81,308	82,115	83,661	85,370	86,493	87,082	87,665	90,007

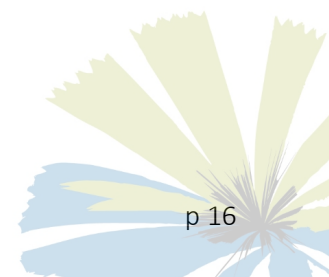
Public transport usage

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Patronage (in persons)	3,219,731	3,145,647	3,130,368	3,034,330	2,828,762	2,816,009	2,559,231	2,128,692



Waste received

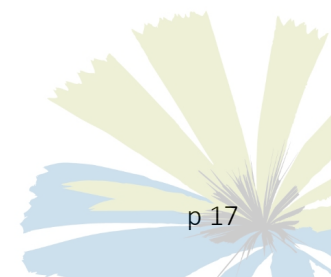
	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Diverted from landfill (t)	54,319	55,179	58,860	57,571	56,224	53,896	56,918	63,038
Sent to landfill (t)	40,065	36,644	39,334	40,132	39,698	38,970	38,723	36,924
Total received (t)	94,807	91,827	98,199	98,000	96,185	92,569	95,532	99,945
Percentage recovered	57.3	60.1	59.9	58.8	58.5	58.2	59.6	63.1





Carbon emissions (tonnes of CO2 equivalent) from Council operations

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Electricity from facilities	6,565	6,412	6,731	5,665	6,132	7,340	7,089	7,477
Electricity from street, traffic and public lighting	7,434	8,015	8,332	8,242	8,373	8,039	8,328	8,699
Electricity from water or sewerage	13,901	12,871	12,347	12,704	13,130	13,335	13,325	13,320
Wastewater treatment fugitive emissions	3,117	3,101	3,101	3,101	3,101	2,678	2,689	1,216
Landfill fugitive emissions (Portsmith)	1,591	0	0	0	0	0	0	0
Fuel use emissions	4,003	3,455	3,364	3,352	3,367	3,270	3,163	2,969
Total Council emissions (including refrigerant gases, propane etc).	38,007	34,214	35,134	33,115	34,174	34,687	34,602	34,437
Council emissions as a percentage of total community emissions						1.48 %	1.58 %	1.62 %





Fuel, water and electricity used by Council operations

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Council electricity use (kWh)	29.2	29.9	29.7	25.7	29.7	29.9	29.8	29.1
Council solar electricity generation as a percentage of Council electricity use	21.1	20.9	19.7	21.8	21.2	21.2	20.9	21.4
Council fuel use (ML)	25.2	25.4	24.7	23.8	25.5	25.6	25.4	25.2
Council water use (ML)	0	5	6	5	2	15	8	2
Council water use as a percentage of community use	0	5	6	5	2	15	8	2

