STATE OF THE ENVIRONMENT

2017 / 2021

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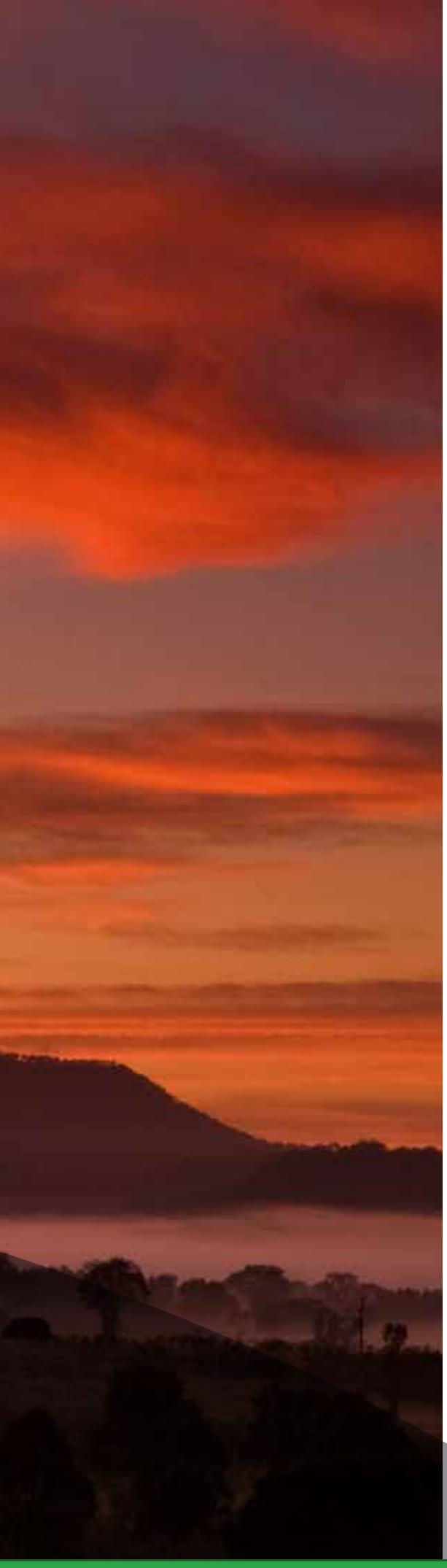
SINGLETON COUNCIL

ACKNOWLEDGEMENT

Singleton Council acknowledges the Wanaruah, Wonnarua people and their custodianship of the land in the Singleton Local Government Area. We also acknowledge all other Aboriginal and Torres Strait Islanders who live within the Singleton Local Government Area and pay our respect to elders past present and future.



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FROM THE MAYOR

More than a requirement of the Local Government Act for end of term reporting, this State of the Environment Report is a checklist of the tangible actions taken by our community in living out our ethos to value, protect and enhance a sustainable environment.

And I'm proud to say our achievements are significant. While this report is an overview of the environmental pressures facing the Singleton local government area, this previously unreported data paints a positive picture of how far we've come. More importantly, it's a substantial baseline to assist in planning future sustainability activities for both Council and our community.

We know that sustainability and being conscious of our impact on the environment is critically important to the people of Singleton, because they told us so – in numerous ways and on numerous occasions. This report presents Environmental Indicators developed from the strategies, deliverables, action items and key measures from a suite of plans and documents developed in consultation with our community, not least the Singleton Community Strategic Plan 2012-2027, the Singleton Council Delivery Program 2017-2021 and Singleton Community Environmental Sustainability Strategy and Action Plan (SCESSAP) (Superseded).

It also paints a picture of a challenging period in our history, recognising that the past five years has seen unprecedented events such as the Black Summer bush fires in late 2019, as well as the ongoing global COVID pandemic. These events have direct impacts for some outcomes documented within this report and have been noted as such throughout.

Acknowledging the vast and diverse achievements in this term of Council outlined in this document, I make special mention of the development and endorsement of the Singleton Sustainability Strategy 2019-2027 and the work of the Sustainability Committee in keeping sustainability at the forefront.

This Strategy is an important resource for the long-term, providing clear direction in promoting, facilitating and supporting our community in social, economic and environmental sustainability. The Strategy seeks to identify priority activities for our community, Council and partner organisations that promote sustainable outcomes in an integrated and coordinated approach to advancing sustainability efforts within our region.

Most importantly, the Strategy, and the results highlighted in this State of the Environment Report, showcase how we all have a role to play in leading changes in sustainability in all its forms – however small our actions as individuals may seem. Our Singleton Sustainability Strategy 2019-2027 sums it up best, with a broader sustainability agenda focused on four of the United Nations Sustainable Development Goals as the blueprint to achieve a better and more sustainable future for all.

I congratulate everyone who was involved in the projects and actions outlined in this State of the Environment Report, and acknowledge the work we are all doing for everyone in our community now and the generations to come.

Cr Sue Moore
Mayor of Singleton

FROM THE GENERAL MANAGER

In a term of Council marked by a series of unprecedented events, including the Black Summer bushfires of 2019 and a global pandemic, 2017-2021 also delivered a long list of achievements for our community. And many of them are included in the pages of this State of the Environment Report, as testament to the value, protection and enhancement of a sustainable environment.

Acting on what our community told us, this period saw a substantial shift in our organisational approach to sustainability, setting a course of actions to lead by example. In making the management of our impact a key consideration in our decision-making across the whole of our business, from sustainable procurement to paperless planning, this document epitomises how every small act creates a ripple.

Most importantly, those ripples can now be captured as tangible, reportable metrics.

More than being a record of achievements for the past five years, this Report identifies key performance indicators that will enable us to continue to report our performance well into the future, delivering on our community's needs now and for generations to come. Remarkably, we have been able to analyse over 110 metrics between 2017 and 2021 to establish trends and opportunities for improvement into the future, setting a strong foundation from which to set sustainability activities for both our organisation and our community moving forward.

The achievements outlined in this Report cover the results of our organisation's efforts to minimise our consumption, most notably a 31 per cent reduction in Council's electricity usage, corresponding to a 29 per cent reduction in greenhouse gas emissions between 2019/2020 and 2020/2021; and water savings including over 15ML of drinking water through a water reuse project implemented at the Singleton Sewerage Treatment Plant and hundreds of thousands of litres of water each year with the implementation of an app-based watering system for parks and fields.

It shows innovation from our staff in delivering projects such as the Seed Library, installation of 14,000 recycled soft plastic pickets at Howe Park, and a switch to donate used pavers from the Town Centre Upgrade – Stage 2 to community groups, saving over 130 tonnes of waste from landfill.

Significantly, it also demonstrates our community is acting alongside us: one in five homes in Singleton has solar panels, there has been an 18 per cent reduction in residential water usage between 2019/2020 and 2020/2021, a 43 per cent increase in garden organics recycled between 2019/2020 and 2020/2021, and an increasing trend in revitalisation of heritage items across our local government area.

Add them all together, and that's a lot of ripples.

I'm proud to present this Report as a record of how Council is acting every day not only to create community, but to create a sustainable community that people will be proud of for decades to come.

Jason Linnane
General Manager

SINGLETON
LOCAL GOVERNMENT AREA

Located in the heart of the Hunter, visitors are drawn to Singleton for its outstanding beauty. Built on the banks of the Hunter River and flanked by farmland, wine country and World Heritage-listed National Parks, Singleton embodies a warm welcome that is only found in regional Australia, inspiring visitors with a sense of discovery and the freedom to explore.

The Singleton local government area (LGA) has a residential population of 23,380 and covers an area of 4,892.7 square kilometres (ABS, Census 2016). The LGA is 197 kilometres northwest of Sydney, and 80 kilometres northwest of Newcastle. The first non-Indigenous settlement occurred in 1861 and it is now home to a diverse mix of commerce and industry including agriculture, vineyards, tourism, defence, and retail. Light and heavy industry, power generation and coal mining are the dominant economic drivers.

An incredible 40% of Singleton is made up of the World Heritage-listed Wollemi, Yengo and Mount Royal National Parks, boasting unspoilt bushland, epic wilderness and tracts of bush. A variety of landforms can be found in the LGA, including the rainforest areas of Mount Royal, the vast bushland of Howes Valley, Mount Royal and Putty, the escarpments and rock faces of the Brokenback Ranges, the rolling hills and rural landscapes of Lambs Valley, Mount Olive, Glendonbrook and Goorangoola, the open waterbodies of Lake St Clair and Glennies creek dam, the Hunter River and Wollombi Brook floodplains, the viticultural and rural tourism landscapes of Pokolbin, Milbrodale and Broke Fordwhich; as well as the built-up areas of the Singleton Township, Hunterview, Singleton Heights, Wattle Ponds, Gowrie and Jerrys Plains (just to name a few).

The LGA boasts many strengths such as natural resources, agriculture, tourism, public administration, heavy manufacturing, viticulture, the Lone Pine School of Infantry, and our world-renowned National Parks. The Hunter Region and the Singleton LGA are entering a new and exciting era with a growing population, greater economic diversification and expanding global gateways that link the region to the rest of the world. The Hunter is swathed in thriving communities, excellent infrastructure, a world-class university, exceptional hospitals, high value manufacturing and a diverse natural environment that underpins the future prosperity of the region. In this context, the Singleton LGA is a leading regional economy with exceptional liveability.

23, 380
Population

25.2^{0}C
Average maximum temperature

657.6 mm
Average rainfall

INTRODUCTION

The State of the Environment Report (SOE) reports on the progress of Singleton Council's environmental strategies established by the Community Strategic Plan 2012-2027.

The SOE is a requirement under Section 428A of the *NSW Local Government Act 1993*. A comprehensive SOE is compiled every four years during the year of an ordinary council election. Singleton Council has prepared this report in accordance with the NSW Local Government (General) Regulation 2005 No 487 under the *Local Government Act 1993*.

The SOE consists of five themes and each theme forms a chapter of this report:
Collectively, the themes provide the overall status of the environment in the Singleton LGA.

1. **Air, Climate and Energy**
2. **Land and Biodiversity**
3. **Water**
4. **Waste**
5. **Heritage**

PRESSURE-STATE-RESPONSE

The SOE is based on the Pressure-State-Response model of reporting. In each chapter, the state of the environment relative to each theme is presented and discussed. The state of the environment is reported through key 'Environmental Indicators' for each theme. These Environmental Indicators have been developed from the strategies, deliverables, action items and key measures from the following Council documents:

- **Singleton Community Strategic Plan 2012-2027**
- **Singleton Council Delivery Program 2017-2021**
- **Singleton Community Environmental Sustainability Strategy and Action Plan (SCESSAP) (Superseded)**
- **Singleton Sustainability Strategy 2019-2027**
- **Singleton Sustainable Futures**
- **Singleton Council State of the Environment Report 2013-14 – 2016-17**

To understand the condition of the environment over time, it is necessary to consider the pressures that have had a profound impact on the environment in the past as well as the current pressures that directly and indirectly influence the state of the environment.

The response of Council to the state of, and pressures on, the environment are described for the period from July 2017 to June 2021. This includes reporting on Council's projects, strategies, achievements and actions over the Council term.

This report has been prepared by Singleton Council and acknowledges that Council, the community, and other parties also play a role in addressing environmental impacts to improve the state of our environment.

HOW TO USE THIS REPORT

Trend icons have been used to aid in the interpretation of the Environmental Indicator data contained in this report. These indicators describe the condition of the environment over time. The condition of the environment may be improving or not improving over time. Where no discernible trend is observable, this is described as either stable or fluctuating. The trend is judged over the four years of the reporting period, but with a greater focus on the latest and most current data.

KEY CHART

 Improving	The environmental condition is improving
 Not improving	The environmental condition is not improving
 Unchanged/stable	The environmental condition is consistent or remains unchanged
 Fluctuates	The environmental condition fluctuates, and no obvious trend is observable from the available data
 Not applicable	The Environmental Indicator is not related to the condition of the environment. For example, the number of waste services or water connections serviced is more a reflection of population size than of any environmental factor or condition.

COMMUNITY STRATEGIC PLAN

The Singleton Community Strategic Plan 2017-2027 is the 10 year blueprint for the future of Singleton setting the course for a vibrant, progressive, sustainable, connected and resilient community.

It is prepared as a reference tool for Council, state government agencies, community groups, non-government organisations, businesses and individuals, who all have a part to play in building our ideal future.

The SOE reports on the progress of the objectives and strategies of the Our Environment pillar detailed in the Community Strategic Plan. For further information on the progress of the five pillars of the Community Strategic Plan (*Our People, Our Places, Our Environment, Our Economy and Our Leadership*), refer to the Singleton Council End of Term Report.

OUR VISION

Vibrant

Progressive

Sustainable

Resilient

Connected

OUR ENVIRONMENT PILLAR

OBJECTIVE

We value, protect and enhance a sustainable environment.

STRATEGIES

1. Collaborate to enhance, protect and improve our environment
2. Educate and advocate to improve air quality in Singleton
3. Promote efficient water and waste management and increase reuse and recycling
4. Collect and manage urban stormwater effectively
5. Manage and reduce risks from environmental pollution and disease
6. Increase the planning and preparedness for natural disasters

OUR MEASURES

Value + protect

- Compliance with water quality targets (drinking, effluent, river health)
- Increasing number of heritage actions completed against the Heritage Management Plan

Enhance

- Improve air quality
- Increasing recycling, reuse and landfill diversion rates
- Decreasing prevalence of noxious weeds

Sustainable

- Decreasing household energy consumption
- Decreasing household water consumption
- Increasing participation rates in household / community education programs

OUR SUSTAINABILITY STRATEGY

SUSTAINABLE DEVELOPMENT GOALS

OUR SUSTAINABILITY PLEDGE

Singleton Council is committed to creating a sustainable, vibrant and progressive organisation, to create a place of work that meets the needs of today and plans for future changes. A sustainable council purchases responsibly, invests wisely, designs with the end in mind and enhances the natural features under its stewardship.

FOUNDATIONS

Sustainability is a key pillar in the Singleton Community Strategic Plan 2017 – 2027 and is entrenched in Singleton Council's Organisational Values and Behaviours, as well as the underlining ethos of key performance indicators – Engaged, Safe, Sustainable and Performing. The principles of ecologically sustainable development are entrenched within the guiding principles for councils under the Local Government Act 1993, including the precautionary principle, intergenerational equity, biodiversity and ecological diversity and improved economic valuation including environmental factors. In 2016 Council adopted the Singleton Community Environmental Sustainability Strategy and Action Plan (SCESSAP). The plan identified a number of sustainability themes and actions for implementation over three years. The implementation of these actions were reported annually in the Annual Report. Following completion of the SCESSAP in 2018, the new Singleton Sustainability Strategy 2019–2027 was developed.

THE WAY FORWARD

Singleton Council prepared the Sustainability Strategy 2019-2027 to provide clear direction in promoting, facilitating and supporting community in social, economic and environmental sustainability. The strategy seeks to identify priority activities for the community, council and partner organisations that promote sustainable outcomes. Singleton Council's Sustainability Strategy 2019-2027 provides an integrated and coordinated approach to advancing sustainability efforts within our region.

The strategy sets out a broader Sustainability agenda, focussing on four of the United Nations Sustainable Development Goals (SDGs) and details long term objectives. It identifies sustainability improvements within the Singleton LGA and areas of collaboration with stakeholders to facilitate community action.

SUSTAINABILITY GOALS

The United Nations Sustainable Development Goals are a set of global principles to guide action. Seventeen goals and associated global targets, actions and indicators were adopted in 2015 by nations (including Australia) and were designed with national governments in mind as a voluntary agreement among the United Nations' 193 member states. All member states agree on the intent behind the goals to address common global issues.

The SDGs can be used by local government, industry and non-government organisations to address issues relevant to the local context that work towards meeting the global targets and actions. Council identified four of the SDGs as the most important to drive the entire Singleton LGA in a sustainable direction. Each of the four SDGs adopted by this strategy are supported by a local long-term objective and deliverables.

The focus of the Sustainability Strategy for Singleton is Goal 7 Affordable and Clean Energy, Goal 11 Sustainable Cities and Communities, Goal 12 Responsible Consumption and Production, and Goal 15 Life on Land.

The purpose of employing these four goals is to ensure that both Council and our community have both the knowledge and perception required for the long-term sustainable development of our LGA and to provide clear direction in achieving sustainable outcomes. Importantly, the goals can empower both Council and the community to define their roles and responsibilities. Finally, these priority goals provide an opportunity to promote integration of our economy, environment and society.

The SOE reports on environmental issues relevant to the objectives and deliverables in the Sustainability Strategy.

SUSTAINABILITY COMMITTEE

The Sustainability Advisory Committee was established to guide the long-term sustainability of Singleton beyond mining in partnership with community stakeholders. The Committee acted as a reference group for the development of the Sustainability Strategy.

Through quarterly meetings, key areas of community interest or concern can be raised by Committee members to determine how Council can assist in creating a more sustainable LGA.

The Committee operates under a defined Terms of Reference, which are as follows:

- Enable the Council to demonstrate civic leadership by promoting actions that enhance the community's quality of life and sustainability.
- Provide input and give due consideration to issues and risks likely to impact on the future sustainability of Singleton having regard to the 17 Sustainable Development Goals.
- Provide advice during the review of Council's strategies, policies and plans to enhance the achievement of sustainable outcomes for the community.
- Consider priorities for inclusion in the Council's Community Strategy, Delivery Plan and Operation Plan which promote sustainability.
- Support raising Council and community awareness about long term sustainability through education and knowledge-based resources.
- Promote engagement with, and foster participation by, the community in the development and implementation of sustainability initiatives which minimise our ecological footprint.
- Provide a local reference point for liaison with and between stakeholders and service providers consulting and working in the community to promote sustainability.
- Act as a reference group during development of the SCESSAP and any future community sustainability strategies and/or action plans.
- Support, monitor and evaluate the implementation of the SCESSAP.

AIR, CLIMATE + ENERGY

Emissions from energy use, transport and industrial processes contribute to air quality and a changing climate.

RELEVANT COMMUNITY STRATEGIC PLAN STRATEGIES:

- Collaborate to enhance, protect and improve our environment
- Educate and advocate to improve air quality in Singleton
- Increase the planning and preparedness for natural disasters

DATA SNAPSHOT

31%

REDUCTION IN COUNCIL ELECTRICITY USAGE
(2019-20 - 2020-21)

29%

REDUCTION IN COUNCIL GREENHOUSE GAS EMISSIONS
(2019-20 - 2020-21)

2.4x

INCREASE IN COUNCIL RENEWABLE ENERGY USAGE
(2019-20 - 2020-21)

1/5

HOMES IN SINGLETON LGA HAVE SOLAR PANELS

300

HOUSEHOLDS PER YEAR INCREASE IN SOLAR PANEL UPTAKE

3%

REDUCTION IN HOUSEHOLD DAILY ENERGY USAGE
(2018-19 - 2019-20)

STATE

ENVIRONMENTAL INDICATOR	2018
Number of chimney flue cleaning rebates issued in Upper Hunter	150
Number of wood heaters replaced in Upper Hunter as a result of the wood smoke reduction program	38

ENVIRONMENTAL INDICATOR	2017-18	2018-19	2019-20	2020-21	TREND
Energy					
Household energy usage per day (kWh)	23.0	23.1	22.3	N/A*	
Energy consumption (MWh)					
• Residential (Supply and off-peak hot water)	81,639	82,590	80,438	N/A*	
• Non-residential (Supply and off-peak hot water)	87,804	90,398	80,216	N/A*	
• Singleton Council (Electricity and street lighting)	5,529	6,458	6,682	4,593	
Solar energy generation capacity (kWp)					
• Residential	6,517	9,080	11,412	N/A*	
• Non-residential	1,650	2,777	4,980	N/A*	
• Solar energy exported to the grid in Singleton LGA (MWh)	4,480	5,842	8,847	N/A*	
• Singleton Council renewable energy consumption (kWh)	N/A**	N/A**	405,410	979,698	

Improving Not improving Unchanged/stable Fluctuates Not applicable

ENVIRONMENTAL INDICATOR	2017-18	2018-19	2019-20	2020-21	TREND
Emissions and transport					
Emissions (tonnes CO_2-e)					
• Singleton LGA	1,665,000	1,704,000	N/A*	N/A*	
• Singleton Council (Scope 1 and 2)	5,505	6,192	6,386	N/A*	
• Water supply and sewerage operations	2,701	3,310	3,665	4,565	
Length of cycleways (km)	15	N/A	N/A	29	
Train patronage on the Hunter Line	926,000	984,000	818,000	593,000	
Air quality					
Number of complaints about air quality	26	17	25	12	
Average $PM_{2.5}$ levels in Singleton (µg/m³)	22	23	31	18	
Average PM_{10} levels in Singleton (µg/m³)	8	8	12	7	
Days of $PM_{2.5}$ air quality exceedance^	1	0	22	6	
Days of PM_{10} air quality exceedance^	5	10	40	10	

*Data unavailable as at time of publication. ^Data shown for calendar years: 2017, 2018, 2019, 2020 respectively. Air quality levels recorded at Singleton air quality monitoring station.
**Singleton Council Large Site Renewable Electricity Consumption data available from 1 January 2020 to 30 June 2021.

AIR QUALITY

Air pollution causes poor air quality. Poor air quality can affect our health and the health of our environment. Natural weather conditions, such as bushfires and dust storms, can affect air pollution levels. Air quality is also affected by our activities such as car exhausts, wood heaters and industrial activities.

The NSW Government operates an extensive air quality monitoring network across the state to measure air pollution levels and compare them to national standards. The air quality monitoring station located in Singleton measures and reports on air quality every hour. An important air pollutant to monitor is particulate matter (PM). Particulate matter is a mixture of small particles and droplets found in the air that are measured in micrometres ($PM_{2.5}$ and PM_{10}). When inhaled, $PM_{2.5}$ and PM_{10} can harm our lungs and heart.

In Singleton LGA, industrial activities, vehicle emissions and wood smoke are the main sources of $PM_{2.5}$ (Fig. 1). Organic matter and weather events also contribute to air pollution in the region.

PRIMARY SOURCES OF $PM_{2.5}$ IN SINGLETON LGA
(%) 2012

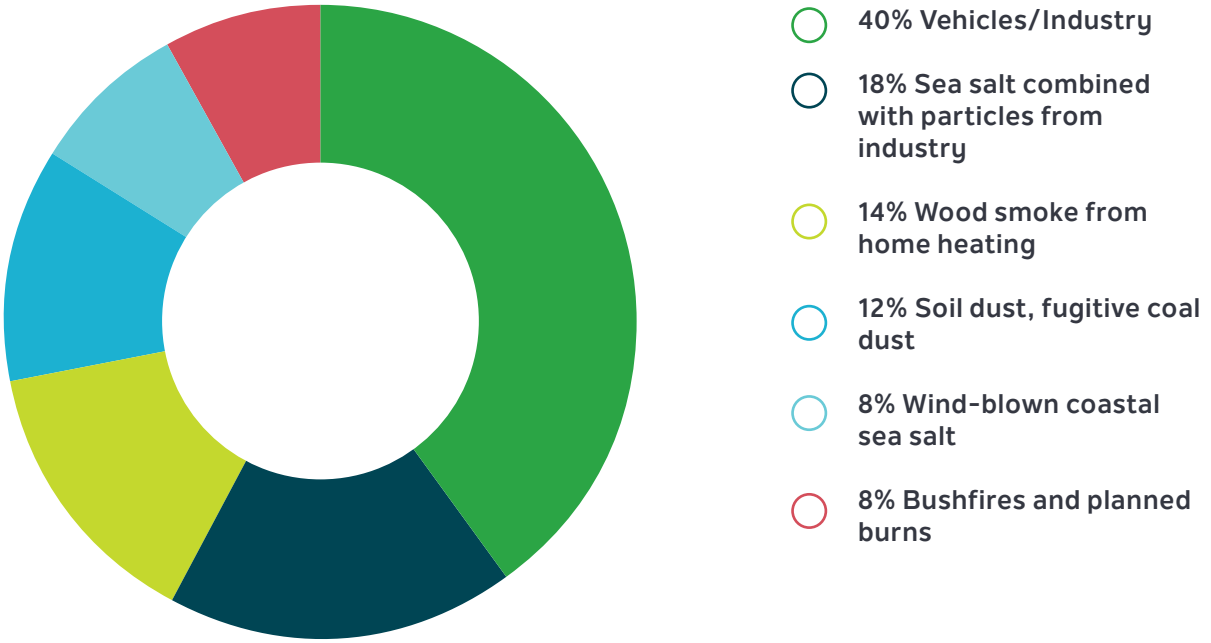
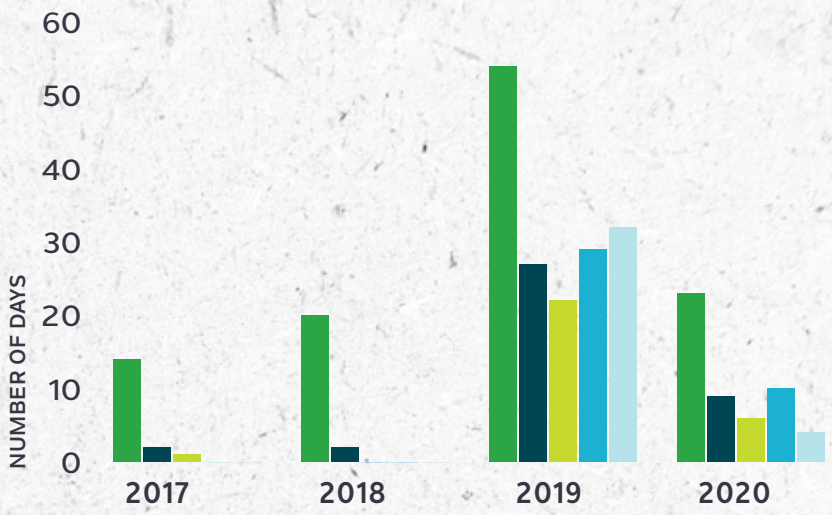


Figure 1. Sources of $PM_{2.5}$ air pollution in the Singleton LGA (Hibberd 2013). *Note: 'Vehicles/ Industry' includes secondary sulphate from local and regional sources of SO_2 such as power stations, emissions from vehicles and industrial activities, and secondary nitrate from vehicles and power stations.*

The National Ambient Air Quality Standard for $PM_{2.5}$ is >8 µg/m³ averaged over 1 year. $PM_{2.5}$ concentrations remained relatively consistent in the Singleton LGA except for 2019-20. This rise can be attributed to intense drought conditions and an unprecedented bushfire season which caused high $PM_{2.5}$ levels across much of NSW (NSW EPA, 2019). Singleton experienced fewer daily exceedances in $PM_{2.5}$ than nearby regions and cities (Fig. 2).

DAYS OF $PM_{2.5}$ AIR QUALITY EXCEEDANCE

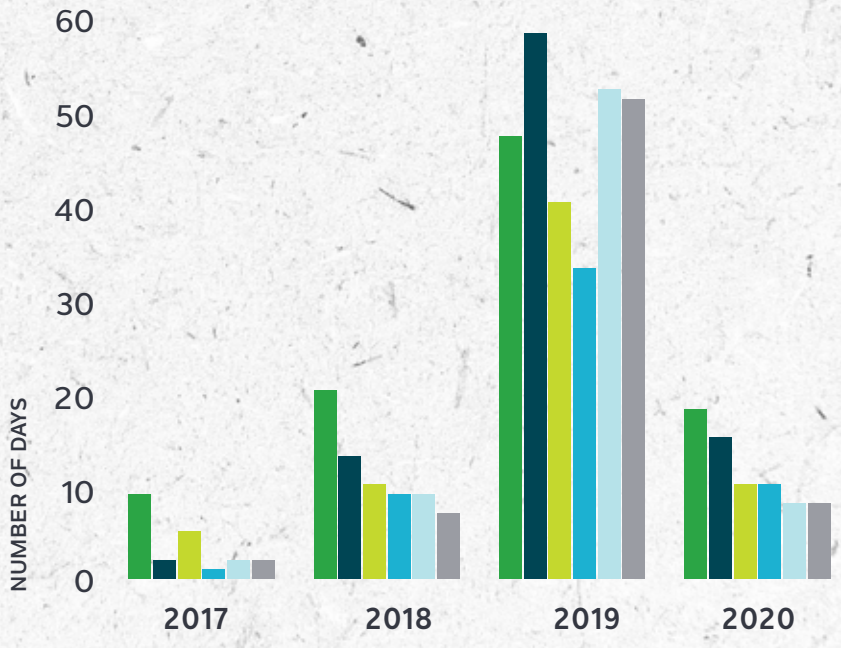


Sydney
Muswellbrook
Singleton
Lower Hunter
Tamworth
Aberdeen

Figure 2. Days of $PM_{2.5}$ air quality exceedances in NSW regions (NSW DPIE 2020). *Note: Stations are as per the National Environment Protection (Ambient Air Quality) Measure 2020. Lower Hunter includes Wallsend, Beresfield and Newcastle stations (excluding Port of Newcastle). Sydney includes 17 Sydney stations (excluding roadside). $PM_{2.5}$ is not measured at Aberdeen Station. Sydney $PM_{2.5}$ levels are impacted by hazard reduction burn most years.*

The National Ambient Air Quality Standard for PM_{10} is >25 µg/m³ averaged over 1 year. Similar to $PM_{2.5}$, the extensive and unprecedented bushfire season in 2019-20 caused PM_{10} levels to rise across NSW during this period. Local and widespread windblown dust caused by the 2018-20 drought also contributed to the increased number of PM_{10} daily exceedances in 2019 and 2020 across the state (Fig. 3).

DAYS OF PM_{10} AIR QUALITY EXCEEDANCE



Sydney
Muswellbrook
Singleton
Lower Hunter
Tamworth
Aberdeen

Figure 3. Days of PM_{10} air quality exceedances in NSW regions (NSW DPIE 2020). *Note: Stations are as per the National Environment Protection (Ambient Air Quality) Measure 2020. Lower Hunter includes Wallsend, Beresfield and Newcastle stations (excluding Port of Newcastle). Sydney includes 17 Sydney stations (excluding roadside).*

CLIMATE

Human activities are increasingly polluting our atmosphere. This pollution acts as a blanket on the Earth that traps heat. As we pollute more greenhouse gases by burning more fossil fuels, this blanket thickens, and our atmosphere gets hotter. This heat is causing more intense bushfires, more intense weather events, more frequent floods, and the extinction of plant and animal species (Fig. 4).

Temperatures in the Hunter Region have been increasing since about 1960. The region is projected to continue to warm into the future. By 2039, temperatures are projected to warm about 0.7°C, increasing to about 2°C sometime between 2060 and 2079 (NSW OEH 2014). Climate change is likely to cause more severe fire weather, more hot nights, fewer cold nights and changing rainfall patterns across the Hunter (Fig. 4).

Climate change is one of humanity's greatest challenges. The good news is that we can slow climate change by reducing, and ideally stopping, greenhouse gas pollution. Action is needed at all levels and by all nations across the world to curb climate change and avoid dangerous tipping points.

Australia is a signatory to the United Nations Framework Convention on Climate Change's (UNFCCC) Paris Agreement. The goal of the Paris Agreement is to limit the increase in global average temperature to well below 2°C, preferably 1.5°C, above pre-industrial levels. The NSW Climate Change Policy Framework has a target to achieve net-zero emissions by 2050 and to improve the state's resilience to a changing climate. Locally, Singleton Council is working with the community to reduce greenhouse gas emissions, increase renewable energy usage, and improve community resilience to climate change (Singleton Sustainability Strategy 2019-2027).

HUNTER REGION CLIMATE CHANGE SNAPSHOT
PROJECTED CHANGES

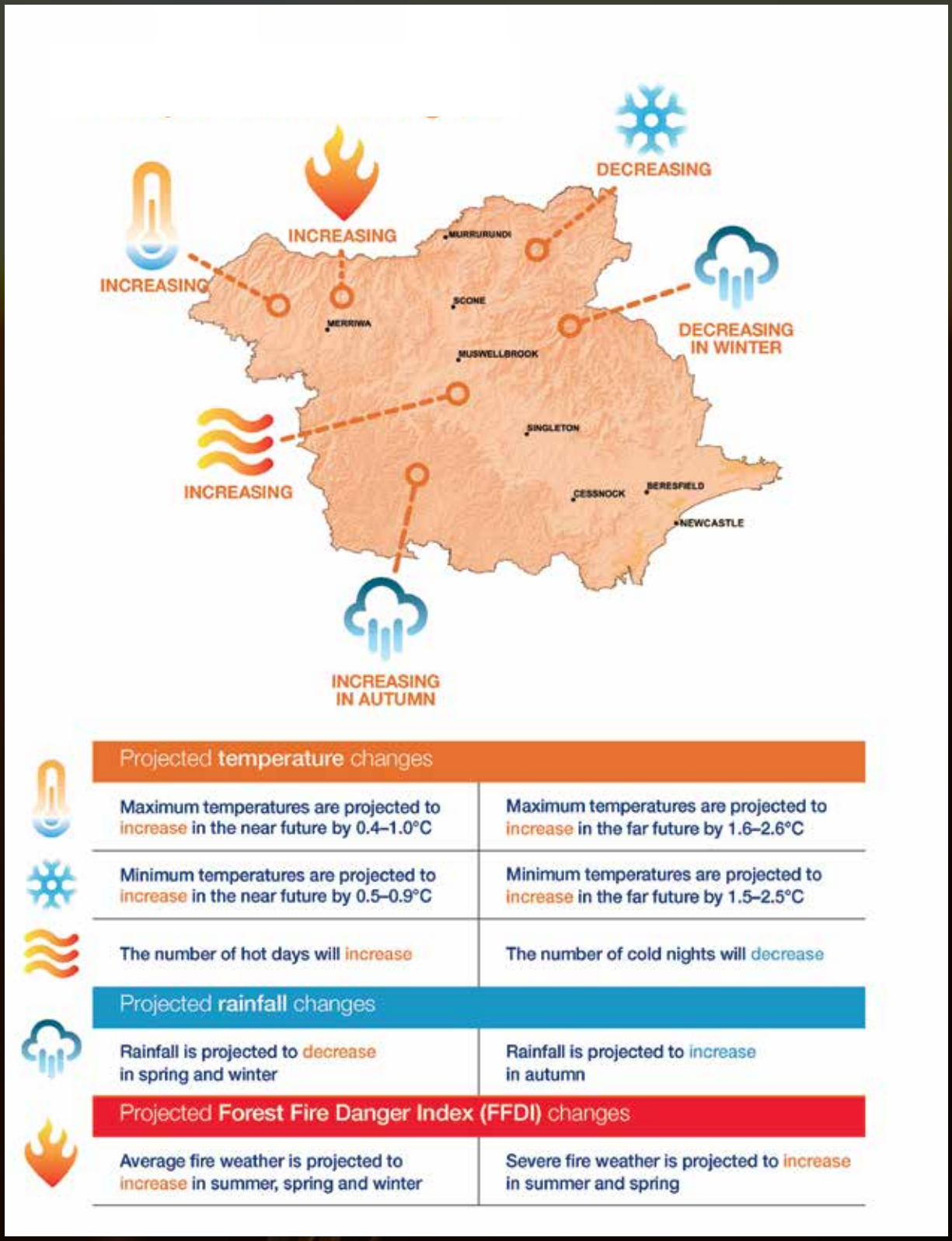


Figure 4. Projected changes in the Hunter Region – Hunter Climate Change Snapshot (NSW OEH 2014).

EMISSIONS

Energy produced from non-renewable sources is causing a build-up of greenhouse gas emissions in the atmosphere. This build-up of greenhouse gases is interfering with Earth's climate system and driving our changing climate.

SINGLETON LGA

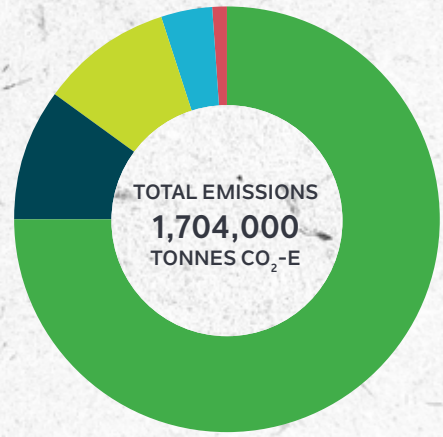
Collectively, the Singleton LGA produces over 1.6 million tonnes of CO_2-e each year. Following a three-year decreasing trend, emissions increased slightly in 2018-19 by 2% to 1.7 million tonnes of CO_2-e (Fig. 5). Electricity usage is the biggest source of emissions in the region (75%) (Fig. 6).

SINGLETON LGA MUNICIPAL EMISSIONS

Figure 5. Emissions for Singleton LGA municipality over time (Ironbark Sustainability 2019). *Note: Excludes land use data. Inclusive of local power stations and mining operations.*

MUNICIPAL EMISSIONS IN SINGLETON LGA
BY SOURCE 2018-19

When drilling down to sectors, the primary source of emissions in Singleton is electricity consumption from industrial activities, which accounts for 67% of the region's municipal emissions (Fig. 7) (Ironbark Sustainability 2019). This is followed by transport (10%), industrial gas usage (8%) and residential electricity usage (5%) (Fig. 7). Singleton's emissions are higher than surrounding LGAs (Fig. 8) largely due to the high industrial electricity usage in the region.



75% Electricity
10% Gas
10% Transport
4% Agriculture
1% Waste

Figure 6. Municipal emissions for Singleton LGA by source 2018-19 (Ironbark Sustainability 2019). *Note: Excludes land use data. Inclusive of local power stations and mining operations.*

SOURCE	SECTOR	EMISSIONS (TONNES CO_2- e)
Electricity	Residential	86,000
	Commercial	51,000
	Industrial	1,159,000
Gas	Residential	5,000
	Commercial	7,000
	Industrial	152,000
Transport	On road	162,000
Waste	Landfill	6,000
	Water	11,000
Agriculture		65,000
Total		**1,704,000**

Figure 7. Municipal emissions for Singleton LGA by source 2018-19 (Ironbark Sustainability 2019). *Note: Excludes land use data. Inclusive of local power stations and mining operations.*

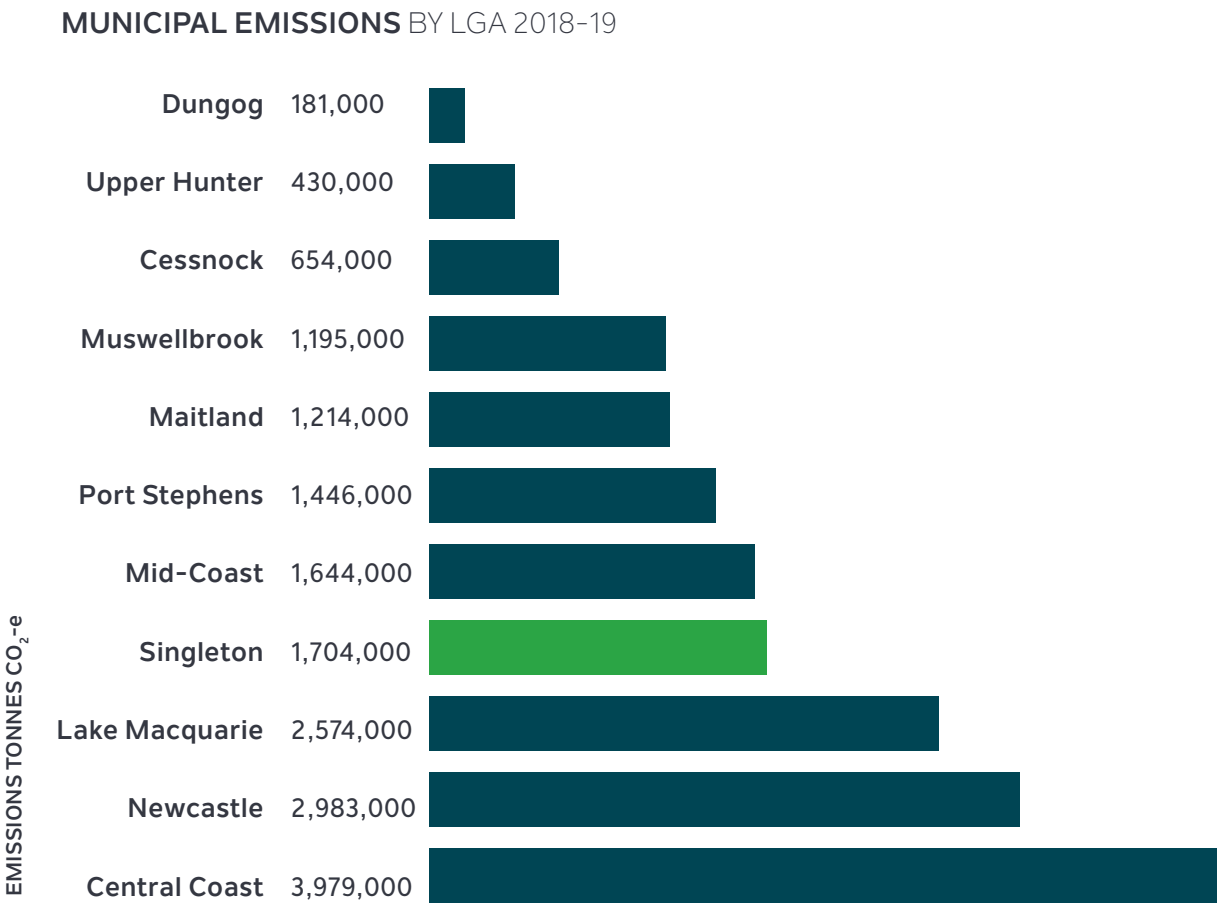


Figure 8. Municipal emissions by LGA 2018-19 (Ironbark Sustainability 2019). *Note: Excludes land use data. Inclusive of local power stations and mining operations.*

SINGLETON COUNCIL

Council produces greenhouse gas emissions through fuel usage (Scope 1) for its fleet and plant equipment and purchased electricity usage (Scope 2) to power our community's street lighting, pump stations and facilities.

In 2020-21 Singleton Council's emissions decreased by 29% compared to 2019-20, Council's lowest emissions in four years (Fig. 9). The higher emissions recorded during 2018-19 and 2019-20 were primarily due to increased electricity demand at Council's Gouldsville Pump Station as a result of the extensive drought period in the region and local mines sourcing additional water supply. Council's diesel usage also increased slightly in 2019-20. This is possibly due to above average plant usage during the COVID-19 pandemic because of social distancing requirements in vehicles. During the same period, Council's gas usage dropped significantly due to the temporary closure of the Gym and Swim Centre and Visitor Information Centre also due to COVID-19 restrictions.

SINGLETON COUNCIL EMISSIONS (SCOPE 1 AND 2)

Figure 9. Council CO_2-e emissions.
Note: Includes Scope 1 (fuel usage) and Scope 2 (electricity usage) emissions.

ENERGY

Australia has an abundance of renewable and non-renewable energy sources. Energy powers our homes, cars and industry, and drives Australia's economy.

Across NSW, about 94% of energy used is from non-renewable sources such as coal, oil and gas (NSW SOE 2018). However, the use of renewable energy sources such as solar continues to increase. Renewable energy usage increased from 11% in 2014 to 16% in 2017. Over the same period, energy consumption in NSW declined by 6% while the economy grew by 9% (NSW SOE 2018).

SINGLETON LGA

In Singleton LGA, solar energy generation has been steadily increasing over time. Every fifth home in Singleton now has solar panels. This is growing by 3%, about 293 homes, every single year. Relative to population size, Singleton Council has high solar uptake compared to other LGAs in the Hunter Central Coast region (Fig. 10). Singleton's rate of solar increase from 2017-18 to 2019-20 is third highest, behind Maitland and Cessnock.

Household daily energy usage decreased by 3% in 2019-20. Singleton households use approximately 22.3 kWh per day. This is slightly higher compared to other LGAs in the Hunter Central Coast region. This may be due to greater heating and cooling needs compared to coastal LGAs. This presents an opportunity to reduce emissions by encouraging energy efficient behaviour changes.

RESIDENTIAL DWELLINGS WITH SOLAR BY REGION (1% OF TOTAL DWELLINGS)

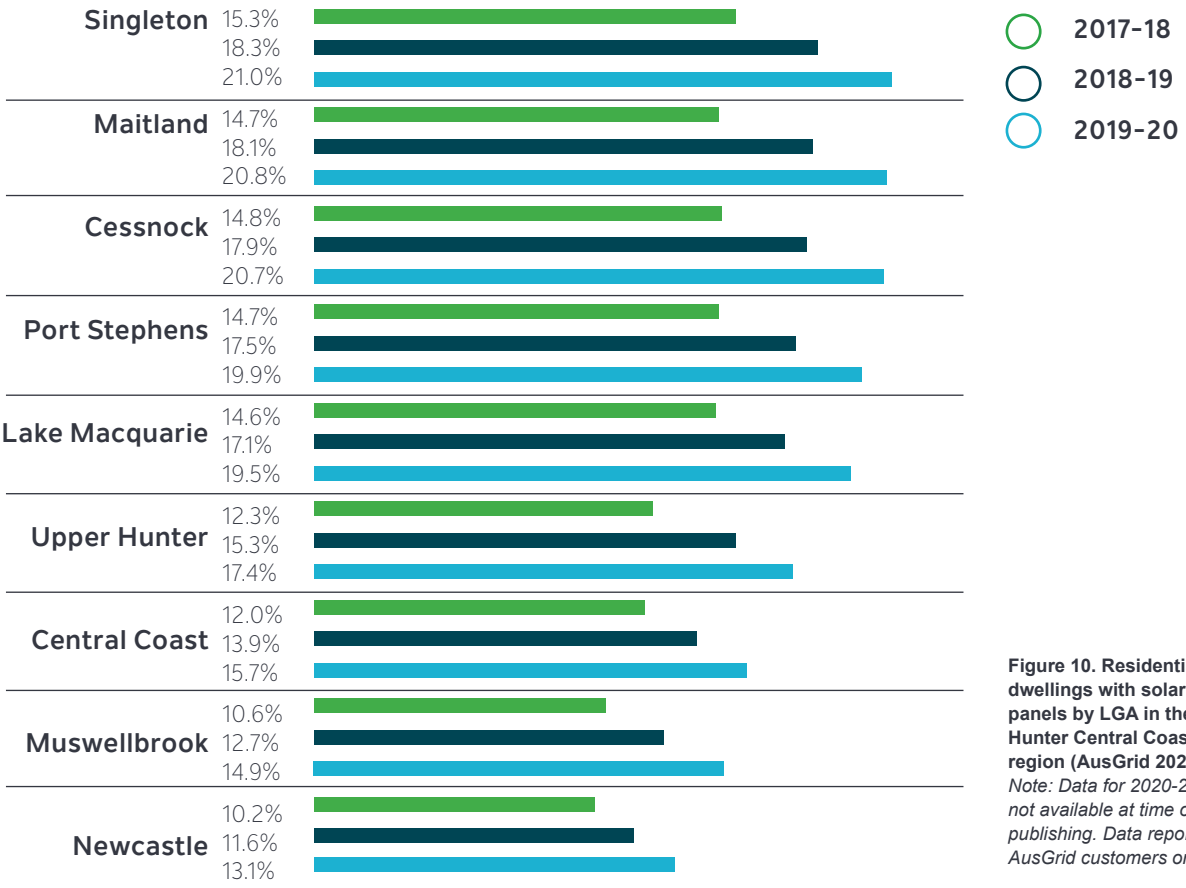


Figure 10. Residential dwellings with solar panels by LGA in the Hunter Central Coast region (AusGrid 2020). *Note: Data for 2020-21 not available at time of publishing. Data reports on AusGrid customers only.*

SINGLETON COUNCIL

Council's electricity usage decreased 31% in 2020-21. This is the lowest consumption rate in four years.

The increase in Council's electricity usage during 2018-19 and 2019-20 is explained by the extensive drought period which caused an increase in water pumping primarily at Council's Gouldsville Pump Station (Fig. 11). Electricity usage dropped to 4,593.11 MWh in 2020-21 after the drought ended (Fig. 11).

SINGLETON COUNCIL ELECTRICITY USAGE

Figure 11. Council electricity consumption (MWh).

TRANSPORT

METHOD OF TRAVEL TO WORK (%) 2016

Figure 12. Method of Travel to Work (ABS 2016). *Note: 'Vehicle' includes cars, trucks and motorcycles for trips by drivers and passengers. 'Other' includes tram, ferry, taxi and other methods. Excludes those who did not go to work and did not state their method of travel.*

Transport enables people and goods to move from one place to another. The transport sector is one of the biggest contributors to greenhouse gas emissions and air pollution in NSW (NSW SOE 2018). Generally, private modes of transport such as cars have a larger environmental impact than public transport such as trains and buses.

Traveling by car continues to be the main method of travel to work in the Singleton LGA. In the 2016 ABS Census, 87% of people travelled to work by car as a driver or passenger in Singleton. This changed little from the 2011 census, where 88% travelled by car. In 2016, 5% of people worked from home, 4% of people walked to work, and less than 1% travelled via train or bus. Singleton residents are more likely to travel by car and less likely to use public transport compared to NSW (Fig. 12).

Almost a million people travelled by train on the Hunter Line in 2017-18 and 2018-19 (Fig. 13) (Transport for NSW 2021). Train usage dropped significantly in 2019-20 due to COVID-19 lockdowns restricting travel and discouraging public transport use. Further declines in train usage have been observed in 2020-21. This drop could be explained by the increase in working from home practices and lingering concerns about hygiene on public transport. Patronage has declined 36% on the Hunter Line compared to 2017-18.

TRAIN PATRONAGE ON THE HUNTER LINE

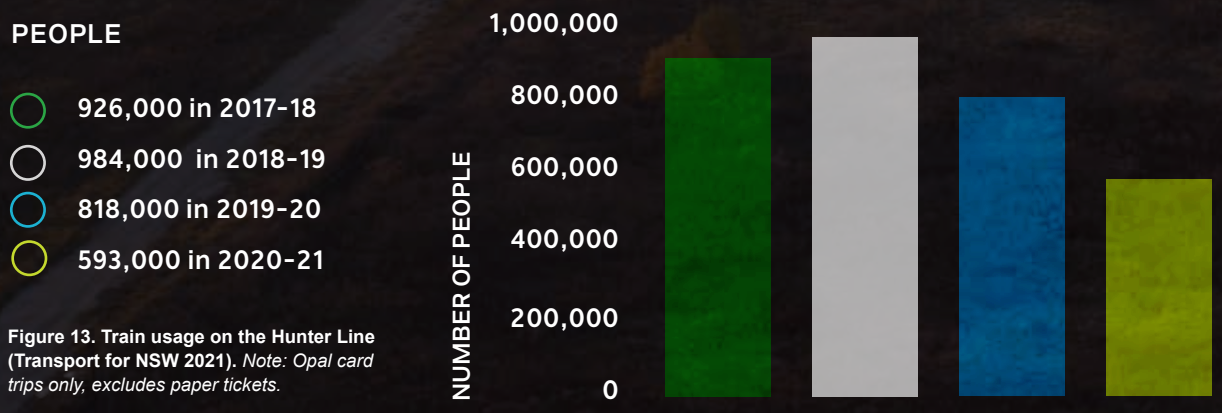


Figure 13. Train usage on the Hunter Line (Transport for NSW 2021). *Note: Opal card trips only, excludes paper tickets.*

PRESSURE

AIR POLLUTION

The quality of the air we breathe is affected by pollution from both human and natural sources. Air quality is affected by:

- **Human activities.** Human activities are a major contributor to air pollution. This includes industrial and commercial activities such as industry, agriculture, as well as domestic activities such as vehicle emissions and wood smoke. Urban areas with higher concentrations of industrial activities and cars typically have higher outdoor air pollution levels.

- **Organic matter.** Organic matter such as pollen, dust, soil and sea salt contribute to airborne particle pollution. This suspended particulate matter consists of small solid particles and liquid droplets that are light enough to remain suspended in the air for long periods.

- **Climate change.** Climate change may drive increased air pollution as bushfires and droughts (and associated dust storms) become more frequent.

- **Population growth.** Singleton's population is expected to grow. Higher population densities mean more development, traffic, household emissions (wood smoke and household cleaning products), hazard reduction burns and economic activity (NSW SOE 2018). This means more air pollution and more people exposed to this pollution.

WHAT CAN YOU DO?

REDUCING AIR POLLUTION

- **If you have a wood heater, get your chimney flue checked and cleaned once a year and only use small logs of dry, untreated wood. Don't let your fire smoulder overnight. Consider replacing your wood heater with an energy efficient air conditioning system.**
- **Switch off your car engine while parked to reduce emissions.**
- **Ensure your vehicle is serviced regularly. Vehicles with worn engines or engine and fuel system problems can emit excessive smoke, a major contributor to particle pollution.**

CLIMATE CHANGE

Since the Industrial Revolution, human activities, mainly the burning of fossil fuels, deforestation and agriculture, have led to significant increases in greenhouse gases in the atmosphere. The average atmospheric concentration of CO_2 has increased from about 280 parts per million (ppm) at the start of the industrial age, to 419 ppm as at May 2021 (CO_2 Earth 2021). Activities such as energy use and transport account for the bulk of the build-up of these greenhouse gases in the atmosphere. More complex and diffuse drivers, such as population growth and economic growth, also drive human-induced climate change.

The following factors continue to contribute to ongoing climate change:

- **Greenhouse gases.** Greenhouse gas emissions from human activities (particularly the burning of fossil fuels) are the main cause of global warming and climate change. Power generation and usage, transport, industry and agriculture are the largest emitters.
- **Population growth.** As the population grows, so too does the demand for energy, transport, resources and food, contributing to further greenhouse gas emissions and climate change.
- **Land use change.** Deforestation and land use change not only release greenhouse gases, but it reduces the ability of forests to sequester carbon from the atmosphere and store it as biomass.

ENERGY + EMISSIONS

Energy use and emissions in the near future will be largely driven by:

- **Energy demand.** The production and use of energy from non-renewable resources is the main cause of greenhouse gas emissions in NSW (NSW SOE 2018). Demand for electricity in NSW is projected to remain stable over the next five years as improvements in energy efficiency and uptake of solar systems offset the increased demand from population growth (NSW SOE 2018). In five years' time, electricity demand is projected to increase as electric vehicle charging starts to have a notable effect on electricity demand (NSW SOE 2018).
- **Transport.** The transport sector is the fastest growing and second biggest emitter of greenhouse gases. The increase in motor vehicle use, places increasing pressure on greenhouse gas emissions. In the future, it is projected that the take-up of electric vehicles will increase which will reduce emissions and increase renewable energy used by the transport sector (NSW SOE 2018).
- **Climate change.** Increased climate variability and temperature extremes may increase demand for heating and cooling, which contributes to increases in energy usage. Extreme weather events present risks for energy security and can also accelerate the need to replace infrastructure, power and manufacturing plants and other buildings to accommodate the changing climate (NSW SOE 2018).
- **Population growth and economic activities.** As the population grows, so too does the demand for energy, transport, resources and food, contributing to increased energy demand and greenhouse gas emissions.

WHAT CAN YOU DO?

Help tackle climate change by reducing your personal carbon footprint:

- Switch off appliances at the wall when not in use. Around 15% of household power is drawn from appliances that we think are turned off but are actually on stand-by, continuing to draw power.
- Choose energy efficiency appliances with a high energy-star rating.
- Hang your clothes on the line or a drying rack rather than a dryer. Clothes dryers account for 12% of electricity usage in a typical household.
- Consider installing solar panels on your home or purchasing green power if you are renting.
- Every journey counts. Walk, ride, carpool or use public transport over a personal vehicle where possible.
- Learn about the 16 steps individuals can take to reduce personal carbon pollution. These actions are derived from experts and research by the United Nations Environment Programme (UNEP).

RESPONSE

REDUCING AIR POLLUTION

Council

- Coordinated a wood smoke reduction program to educate the community about pollution in wood smoke and raise awareness of financial incentives to replace wood heaters and clean chimney flues. As of 2018, the wood smoke reduction program in the Singleton and Muswellbrook LGAs resulted in 38 wood heaters being replaced and 150 chimney flue cleaning rebates being issued (ERM 2020).
- Commenced investigation into the business case for transitioning to an electric vehicle fleet.
- Engaged with third party providers for the installation of electric vehicle charging stations across key recreational areas in the LGA.
- Advocated through Singleton Council Advocacy Agenda to increase passenger train services to and from Singleton.
- Continues to play an advocacy role for improved local air quality outcomes.
- Attended and contributed to Upper Hunter Mining Dialogue and Working Group meetings, Hunter Joint Organisation of Councils meetings and Upper Hunter Air Quality Advisory Committee meetings.
- Made a submission to the NSW Clean Air Strategy 2021-2030, making 21 recommendations including actions to monitor and model ‘at risk’ communities in rural and regional areas, engage with communities to ensure they are fully informed of the impacts of air quality and include communities in ongoing monitoring and improvement efforts.

SUSTAINABILITY + CLIMATE RESILIENCE

Council

- Developed and adopted the Singleton Sustainability Strategy 2019-2027 incorporating four Sustainable Development Goals (Goal 7, 11, 12 and 15). The Environmental Services 'Strategy on a page' has been developed and implemented through establishment of key priority areas against the identified Sustainable Development Goals, and the development of metrics to report to Council and the community on performance against the Strategy.
- Was Highly Commended in the Environmental Leadership category at the Local Government Awards 2021.
- Developed and implemented a Sustainable Procurement Guide.
- Developed a Sustainable Buildings Guideline for new Council buildings.
- Has undertaken a gap analysis against ISO20400 to establish a baseline and actions to work towards integrated sustainable procurement outcomes.
- Is a member of DPIE Sustainability Advantage.
- Joined the Sustainable Choice Program.
- Commenced a review of the Climate Change Adaptation Plan.
- Is developing a Climate Change Risk Assessment (CCRA) Report.

ENERGY EFFICIENCY + EMISSIONS REDUCTION

Council

- Joined the Cities Power Partnership (CPP), pledging to install renewable energy on Council buildings, implement education and behaviour change programs, adopt best practice energy efficiency measures, implement EV charging stations and set renewable energy/emissions reduction targets and sustainable energy policies.
- Is installing 750.23kW of solar on 12 Council facilities, with projected emission reductions of 897.63 tonnes per year. The project will be completed by the end of 2021. The total energy savings is estimated to be $126,652 per year.
- Installed a 6.5kW solar system on the State Emergency Service (SES) Building and a 6.6kW solar system on the new Animal Management Facility which will provide greenhouse gas emission reductions of approximately 14.6 tonnes of CO_2 per year.
- Installed LED lights on four Council facilities including the Civic Centre and Auditorium and Waste Management Facility. By the end of 2021, an additional six council facilities will be upgraded to LED lighting (698 lights), reducing CO_2 emissions by a further 210 tonnes each year. This includes the Singleton Library, Gym and Swim Centre and Youth Centre.

- Installed 840 energy efficient LEDs as part of the Street Lighting Improvement Program established by the Southern Sydney Regional Organisation of Councils (SSROC). This is projected to decrease energy usage and emissions from street lighting by over 76%. This is a reduction of 244.9 tonnes of CO_2-e each year.
- Purchases approximately 20% of its electricity for large sites from the Moree Solar Farm project along with other regional councils through the Program for Energy and Environmental Risk Solutions (PEERS) agreement.
- Is trialling sensor lights powered by solar for Lake St Clair park shelters to replace lights that were previously on all night, reducing emissions and saving energy and electricity costs.
- Implemented an energy efficient lighting upgrade at Howe Park. Using an app, clubs can control lux (lighting intensity). This means more efficient low lighting can be used 90% of the time, and more intense lighting can be turned on for night cricket and football games.
- Is undertaking an aeration upgrade project on the Sewage Treatment Plant. Controlling the aerator's speed to meet demand is significantly more energy efficient compared to operating them at full speed. The project is expected to reduce the power usage for aeration by about 20%.

NATURAL DISASTER PREPAREDNESS

Council

- Undertook a review of preparedness documents, such as the EMPlan, consequence management guides, and an Evacuation Centre Procedure which outlines the most appropriate centre for different types of emergencies.
- Developed and implemented a revised Roads Asset Management Plan with consideration in the event of natural disaster.
- Held a mock Emergency Evacuation Centre exercise at Singleton Heights Diggers - the first COVID–safe evacuation centre trial in the state under COVID-19 guidelines.
- Employed a Disaster Preparedness Project Officer to outreach to bushfire impacted communities and Singleton Heights supporting community mapping, addressing skills gaps and supporting recovery activities.
- Presented a Disaster Reduction Stall at the Seniors Week Lunch. From the 12 surveys completed, the feedback showed concern amongst Seniors regarding disaster preparedness.
- Commenced service delivery in Singleton Community Hub in Singleton Heights to address localised vulnerabilities and fill service gaps, pre-embedding service provision in Singleton Heights evacuation precinct.
- Collaborated with Red Cross and local communities to develop Community-Led Resilience Teams formalising and strengthening local networks.
- Instigated a Community Resilience Network and forums to adjunct to the Singleton Local Emergency Management Committee (LEMC).
- Continues to link and leverage local planning and preparedness activities with other local councils across the Resilience NSW Network.
- Hosts the annual Emergency Services Expo to showcase the role emergency services play, and how residents can prepare themselves for an emergency.
- Provided funding for the upgrade to Paynes Crossing Bridge to allow for emergency service vehicles to cross the bridge to respond to emergencies and disasters.
- Provided funding to upgrade a bridge on Putty Road to improve access for emergency services vehicles.

NATURAL DISASTER RECOVERY

Council:

- Provided a Community Support Package of $500,000 to help the Singleton community recover from the impacts of the bushfires and COVID-19 pandemic. Support included community and business relief and rebuild grant funding to local organisations, immediate relief support to community organisations including the Salvation Army and the Singleton Neighbourhood Centre, a ‘shop local’ initiative and a Business Supporting Business program through the Spend in Singleton gift card program.
- Provided $225,000 in funding across 14 Community Rural Halls for maintenance and upgrades, and social wellbeing support after the bushfires.
- Provided $100,000 in funding across the Singleton LGA Rural Fire Brigades for essential equipment.
- Administered a Disaster Readiness Community Wellbeing Grant of $50,000. Small grants of up to $5,000 were provided to the community to support disaster preparedness wellbeing activities across the LGA.
- Collaboratively promoted and hosted an LGA flood information session in response to community requests during the March 2021 flood event. The session was attended by 50 people.
- Developed a locally led schools recovery program and team with Local Land Services, Red Cross, NSW Rural Fire Service and State Emergency Service.
- Provided $300,000 in funding to the Hunter Valley Wine and Tourism Association, Broke Fordwich Wine Tourism Association and Around Hermitage Association. The funding was provided for destination marketing campaigns to help the industry recover from the significant impacts to the tourism and wine industries from the bushfires including loss of bookings and over 90% of the 2020 vintage lost to smoke taint.


Yes We Are OPEN
Please push the door
If you wish to handle crystals, please wear the gloves provided
Therapies
Air Conditioned
Please Come In
PUSH
WLT
VISA

OUR HIGHLIGHTS

COUNCIL HIGHLY COMMENDED IN ENVIRONMENTAL LEADERSHIP

At the Local Government Awards 2021, Singleton Council was Highly Commended in the Environmental Leadership category for the Sustainable Future Singleton project, which covers a two-pronged program of investment and engagement in the local implementation of the United Nations SDGs including the Singleton Sustainability Strategy and the Sustainable Future Statement.

RENEWABLE ENERGY PROGRAM

Council commenced participation in the Program for Energy and Environmental Risk Solutions (PEERS) in 2020, a landmark renewable energy agreement to cut emissions and costs. Through the PEERS agreement, Singleton Council purchases approximately 20% of its electricity for large sites from the Moree Solar Farm project. Around 440,000 MWh of renewable energy will be supplied to the 18 councils over the life of agreement. The renewable energy Power Purchase Agreement (PPA) will provide Council with significant cost savings while also reducing carbon emissions. For the period 01 January 2020 to 30 June 2021 Council's total renewable energy consumption was 1,385 mWhs.

LIGHTING THE WAY

The streets of Singleton are significantly more energy-efficient with Singleton Council and Ausgrid's partnership to replace local streetlights with new, more reliable LEDs now 99 per cent complete.

As of July 2021, Singleton has installed 989 energy efficient LEDs as part of the project. The energy efficiencies of LEDs will deliver a 76 per cent reduction in energy usage and emissions from street lighting - a reduction of 244.9 tonnes of CO_2-e each year. This is the equivalent emissions from charging 29 million smartphones (which is almost double the smartphones that are in Australia!).

SOLAR SOLUTIONS TRANSFORM SINGLETON COUNCIL'S ENERGY USE

Singleton Council will install 750.23kW of solar across 12 Council sites including the Council Administration building, Gym and Swim Centre, Sewage Treatment Plant, library and Waste Management Facility. The project will cut CO_2 emissions by 897.63 tonnes each year. This is the equivalent of taking 370 cars off the road each year. The total energy savings is estimated to be $126,652 per year. The project is currently underway and will be completed by the end of 2021.

The total annual saving across all 12 sites has been calculated at $126,652

LAND + BIODIVERSITY

The Singleton LGA is rich in biodiversity, comprising significant areas of vegetation and a wide variety of animal species. Our land includes the soil, vegetation and natural ecosystems within our LGA, as well as our open spaces and recreation areas. We value our native flora and fauna and the condition of our living resources.

RELEVANT COMMUNITY STRATEGIC PLAN STRATEGIES:

- Collaborate to enhance, protect and improve our environment

DATA SNAPSHOT

81%
COVERED BY NATIVE VEGETATION

34%
CLASSIFIED AS NATIONAL PARK

775KM
OF RIVERS, CREEKS + STREAMS

3
WORLD HERITAGE-LISTED NATIONAL PARKS

79
PARKS + RESERVES

STATE

ENVIRONMENTAL INDICATOR NSW

Number of species listed as threatened in NSW	1,025
Number of presumed extinct species in NSW	77
Number of ecological communities listed as threatened in NSW	112
Number of declared pests in NSW	5

^Data as at 2018 (NSW SOE 2018).

ENVIRONMENTAL INDICATOR SINGLETON

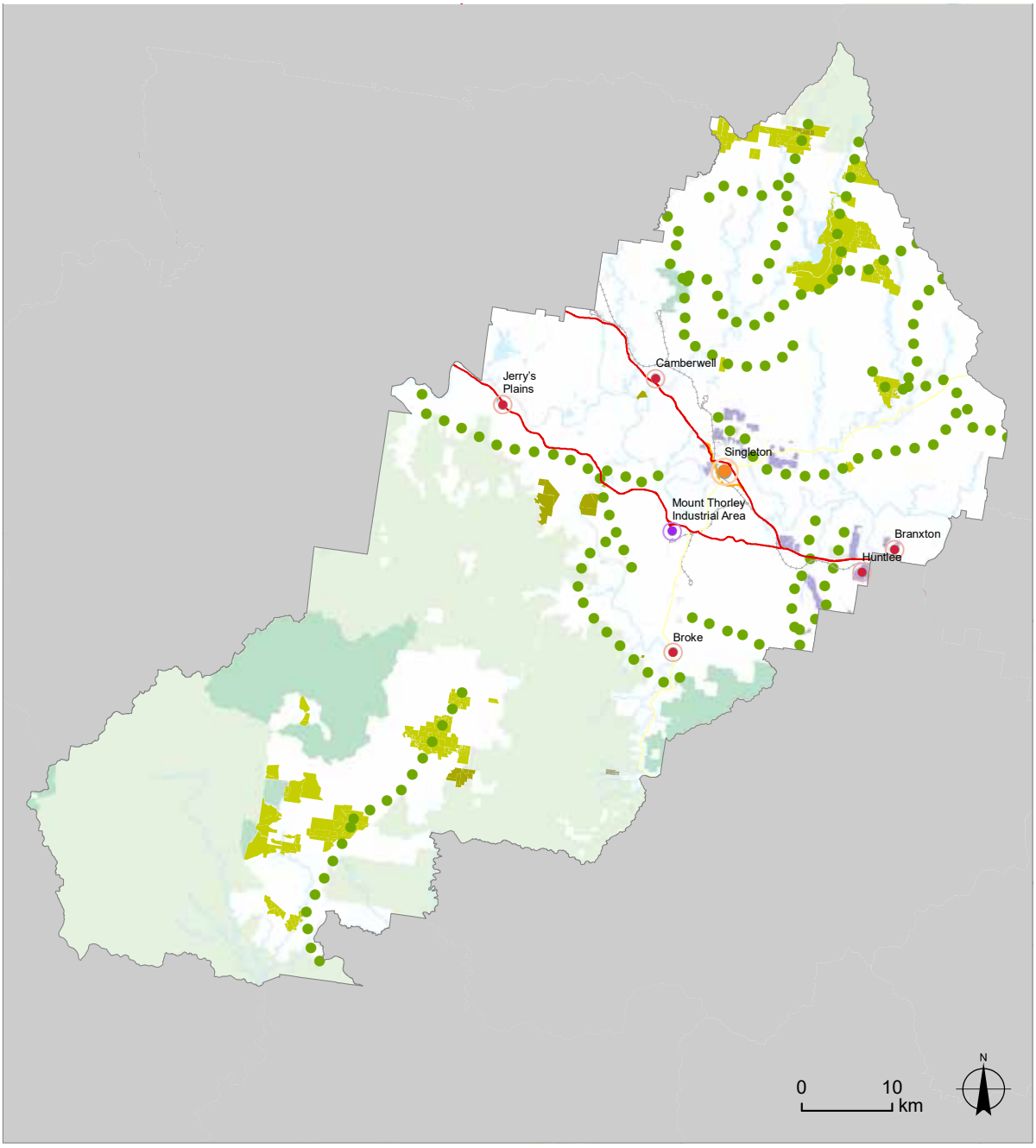
Land + vegetation	
Total area of the Singleton LGA (ha)	489,270
Total land covered by native vegetation (ha)	395,200
Total area of National Parks (ha)	166,032
Total area of State Forests (ha)	29,339
Total area of water bodies (ha)	2,915
Area of open spaces maintained by Council (ha)	433
Total length of rivers, creeks and streams (km)	775
Number of parks and reserves	79
Land covered by native vegetation (%)	81%
Land that is classified as National Park (%)	34%
Conservation agreements	
Land subject of a conservation agreement (%)	4%
Number of conservation agreements with ratepayers	10
Area of conservation agreements with ratepayers (ha)	1,753.50

Improving Not improving Unchanged/stable Fluctuates Not applicable

Biodiversity	
Number of threatened species listed under the *NSW Biodiversity Conservation Act 2016* recorded between Jul 17-Jun 21	44
Weeds	
Number of species listed as a priority weed in Hunter Region (2015)**	112
Number of weed species treated between Jul 17-Jun 21#	20
Land use zones	
R1 General Residential (ha)	1,233
R2 Low Density (ha)	50
R5 Large Lot Residential (ha)	773
E4 Environmental Living (ha)	2,044
E3 Environmental Management (ha)	1,310
RU1 Primary Production (ha)	183,645
RU2 Rural Landscape (ha)	57,213
RU4 Primary Production Small Lots (ha)	18,217
RU5 Village (ha)	20
B1 Neighbourhood Centre (ha)	4
B3 Commercial Core (ha)	10
B4 Mixed Use (ha)	29

***Data as at 2019-20. **(NSW WeedWise 2015). #Upper Hunter Weed Authority data for Jul 2016 – Jun 2021. ##Data as at 2020-21.**

ENVIRONMENTAL INDICATOR	2017-18	2018-19	2019-20	2020-21	TREND
Weeds					
Number of weed inspections conducted on properties and high-risk sites by Upper Hunter Weed Authority on behalf of Council	346	328	404	301	−
Area of weeds controlled on Council roads by Upper Hunter Weed Authority on behalf of Council (ha)	22.82	55.94	29.32	24.64	−



Key

- LGA Boundary
- Strategic Centre
- Centre of Local Significance
- Significant Employment Land Cluster
- Strategic Growth Areas
- Major Inter-Regional Road
- Minor Inter-Regional Road
- Proposed Transport Infrastructure
- Railway Line
- Watercourse
- Waterbody
- National Park
- State Forest
- Open Space and Reserves
- Bio-Banking Agreement
- Conservation Agreement
- Property Vegetation Plan
- Concept Biodiversity Corridor

Figure 14. Environmental Protection and Conservation Land Map for Singleton LGA (Singleton Local Strategic Planning Statement 2041).

LAND

The natural environment, National Parks and unspoilt wilderness are features that make Singleton a desirable place to live and visit. Over 81% of the Singleton LGA is covered by native vegetation. **An incredible 34% of Singleton is made up of the World Heritage-listed National Parks:**

- Yengo National Park. The World Heritage-listed Yengo National Park is part of the Greater Blue Mountains World Heritage Area, stretching from Wisemans Ferry to the Hunter Valley.
- Wollemi National Park. Also part of the Greater Blue Mountains World Heritage Area, Wollemi National Park is the second-largest national park in New South Wales and contains the largest remaining area of wilderness in the state.
- Mount Royal National Park. Mt Royal National Park is a World Heritage-listed park and adjoins Barrington Tops National Park.

The Environmental Protection and Conservation Land Map (Fig. 14) provides an overview of the open spaces in the Singleton LGA, including biodiversity corridors, National Parks and water bodies. Council supports an active and healthy community with parks, open spaces and reserves for residents and visitors alike to enjoy. There are currently 79 parks and reserves in the LGA, many of them award-winning. This has increased from 74 in 2017.

There are currently ten conservation agreements in the Singleton LGA, protecting a total of 1,753.50 hectares. A conservation agreement is an agreement between the owners of land and the State Government that all or part of their land is not used for residential, farmland or business purposes. The rates are adjusted so that the portion not used is non-rateable. A conservation agreement provides the opportunity for land to be protected and conserved.

BIODIVERSITY

Biodiversity is the complex assemblage of plants, animals, micro-organisms and associated communities that exist in nature and is made up of genetic diversity, species diversity and ecosystem diversity. Not only does biodiversity have importance to humans, it also has intrinsic value, meaning that each species has a value and a right to exist on its own merit. The significance of biodiversity is recognised in the Biodiversity Conservation Act 2016 and the Hunter Regional Plan 2036.

In NSW, the number of species at risk of extinction continues to rise (NSW SOE 2018). As at 1 December 2017, 1,025 species were listed as threatened in NSW. Between 2015 and 2017, an additional 26 species (3% increase) were added to the Biodiversity Conservation Act 2016 and Fisheries Management Act 1994 (NSW SOE 2018). Between 2015 and 2017, the overall number of species listed as presumed extinct increased by one, to 77 (NSW SOE 2018). The number of threatened ecological communities increased by four to 112 for the period 2014-2017 (NSW SOE 2018).

The protection and enhancement of important biodiversity corridors and minimisation of the impacts of development on land and vegetation are important priorities for Singleton LGA. This includes managing the impacts of human activities and the threat of invasive species to our natural ecosystems.

BUSHFIRES AND FLOODING

The Singleton LGA has approximately 361,977 hectares (74%) of land mapped as being bushfire prone land (notwithstanding grasslands). There is around 24,822 hectares (5%) of land mapped as being susceptible to flooding during the 1:100 year flood event for the Hunter River and Wollombi Brook, notwithstanding localised flood impacts associated with creeks and gullies.

WEEDS

Pest animals and weeds threaten over 70% of threatened species and endangered ecological communities in NSW (NSW SOE 2018). Weeds present a threat to our natural environment, primary production industries, and community. They can damage the natural landscapes, agricultural lands, and waterways by displacing native species, contributing to land degradation and reducing the productivity of farming and forest lands.

A weed can be defined simply as a plant that is growing out of place, or in an unsuitable location. However, some weeds are declared to be 'priority weeds' by the Department of Primary Industries due to the significant negative impact that they can have on the community, the environment or the economy. In the Hunter Region, 112 priority weeds have been identified (NSW WeedWise 2015).

UPPER HUNTER WEED AUTHORITY

The Upper Hunter Weed Authority (UHWA) is the Local Control Authority for invasive plants under the NSW Biosecurity Act, 2015 operating across the Singleton, Muswellbrook and Upper Hunter Shire LGAs. UHWA provides effective integrated weed management systems utilizing the latest technology to prevent, contain or reduce the biosecurity risk of invasive plants to the environment, economy and community within its areas of operation. Since July 2017, UHWA has undertaken control of 20 weed species, treating 132.72 ha of weed infestations in the Singleton LGA as well as undertaking 1,379 weed inspections.

The major control program untaken in the Singleton LGA over the last four years is the African Olive Roadside Control program. This program has and is currently being conducted on roads on the south-eastern boundary of the Singleton LGA. These roads include New England Highway (north of Branxton), Golden Highway, Hermitage, Old North and Stanhope Roads.

112 priority weeds have been identified in the Hunter Region

The program has been conducted mainly with external funding from Hunter Local Land Services and has to date treated approximately 80 kms of roadside infestation. The aim of this program is to establish a containment line between the Upper Hunter and the relative heavily infested roadsides of the Lower Hunter.

Other weed infestation programs conducted in Singleton LGA over the past four years include the Mother of Millions control in Jerrys Plains and Green Cestrum control in Carrowbrook. Weed species treated in the Singleton LGA include African Boxthorn, African Olive, Alligator Weed, Blackberry, Bridal Creeper, Cat's Claw Creeper, Crofton Weed, Green Cestrum, Giant Parramatta Grass, Johnsons Grass, Lantana, Madeira Vine, Mesquite, Mimosa Bush, Mother of Millions, Paterson's Curse, Prickly Pears- Opuntias, St John's Wort, Tiger Pear and Yellow Bells.

UHWA plan, manage and control declared priority weeds within the Singleton LGA to ensure compliance with all relevant acts, regulations, and standards and helps the community identify weeds on their property. UHWA and Council's role is to work with landowners and occupiers to help the community with its responsibilities according to the Biosecurity Act and Hunter Regional Strategic Weed Management Plan 2017-2022.

This includes:

- **Identifying weeds**
- **Providing advice and information on ways to control weeds**
- **Providing displays at community events about weeds**
- **An ongoing program of rural and urban inspections to check for noxious weeds**
- **Noxious weed management in the Singleton LGA**

PEST ANIMALS

Pest animals are species of non-native animals that can or do cause damage to agriculture, environmental resources or put human safety at risk. A pest means different things to different people, depending on the impact an animal has on their livelihood, lifestyle or wellbeing and their beliefs about an animal's presence and behaviour.

The majority of dryland cropping and sheep grazing is in the Upper Hunter district. Wild dogs and foxes impact on sheep production, and feral pigs and wild deer can cause major damage to crops. Within grazing country across the region, rabbits persist in varying concentrations. Foxes and cats have a big impact on our native fauna and large hoofed animals like wild deer and horse have significant impacts on sensitive environments.

The distribution of some pest animals in the region (e.g. deer) has increased and along with increasing urbanisation which means more communities are affected by pest animals and pest control becomes more complex. Control in peri urban and urban environments is complex because control options are more limited, people's livelihoods aren't dependent on the land and a greater range of issues have to be considered.

Under the *Biosecurity Act 2015* framework, biosecurity is a shared responsibility where Government, industry and the people of NSW work together to protect the economy, environment and community from the impacts of pest animals. Within the Hunter Region implementation of the NSW *Biosecurity Act 2015* and NSW Biosecurity Strategy is guided by the Hunter Regional Strategic Pest Animal Management Plan 2018 – 2023. The plan provides guidance on how both public and private land managers can meet their general biosecurity duty and identifies key commitments for pest animal management activities over the life of the plan.

PRESSURE

Pressures impacting land and biodiversity include:

- **Climate change.** Severe weather events such as bushfires, droughts and floods, as well as changes in temperature and rainfall contributes to loss of biodiversity and affects all types of native vegetation.
- **Land use change and unsustainable land management.** Increases in development due to population growth impacts biodiversity and ecosystems through increased traffic, pollution and resource use. Land use changes directly impact vegetation extent and condition.
- **Land clearing and habitat destruction**. Habitat fragmentation and the clearing of vegetation for rural, residential and urban development results in the direct loss of species and native vegetation. Clearing of native vegetation and habitat destruction is the single greatest threat to biodiversity in NSW (Coutts-Smith and Downey 2006).
- **Invasive species.** Invasion by introduced plant and animal species contributes to the decline of many native species.

Other pressures include overgrazing, disease, over-exploitation, altered fire regimes, changes in water regimes and pollution.

WHAT CAN YOU DO?

- **Plant native plants in your gardens. Not only are they beautiful, but they provide habitat, shelter and food for wildlife, enhance wildlife corridors, are more resistant to pests and diseases, and protect the structure and health of your soil. Compared to introduced species, they require less water, are better suited to the local environment and are lower maintenance.**
- **Place a birdbath in your yard to help create a mosaic of sanctuaries all throughout Singleton, attracting birds, butterflies and frogs.**
- **Undertake activities to improve the condition and extent of natural areas on your own property or join a Landcare group and undertake activities on public land.**
- **Plant your own backyard vegetable garden or join the Singleton Community Garden to participate in social gardening events.**
- **Get outdoors. Take in the scenery and admire our local biodiversity as you explore our National Parks, Lake St Clair, and visit Singleton's award-winning parks.**
- **Participate in National Tree Day, Australia's largest community tree-planting and nature care event.**
- **Participate in the Aussie Backyard Bird Count, Australia's largest citizen science project with over 100,000 people and 1,500 schools participating each year.**

RESPONSE

Council:

- Developed the Singleton Weed Management Strategy.
- Developed a Biodiversity Policy.
- Have been creating a green corridor down the middle of Robinson Reserve.
- Hosted events for National Tree Day with 1,000 trees planted in 2018 and another 1,000 in 2019 with the help of over 130 volunteers. Events in 2020 and 2021 were cancelled due to the COVID-19 pandemic.
- Completed a revitalisation of Singleton's community garden in 2019 which saw the creation of a native bird habitat haven, bush tucker garden and creation of an Indigenous learning circle. Compost and soil conditioner were sourced from the Garden Organics Service to demonstrate how our waste from the garden organics bin goes back into our community gardens.
- Implemented a Seed Library at the Singleton Library with members borrowing and returning seeds. This strengthens our community's biodiversity with seeds adapted to the local area.
- Officially opened the new Wanaruah Park playground, paying homage to traditional landowners.
- Built a fence surrounding Howe Park made from recycled plastic, including soft plastic such as plastic bags, collected by households.
- Tripled the size of our all-abilities playground at Rose Point Park with a $900,000 upgrade.
- Transformed an old car dealership lot on John Street into Riverside Park. Riverside Park was voted Best Playspace (over $500,000) at the NSW/ACT Parks and Leisure Australia Awards of Excellence.
- **Completed several upgrades at local parks and reserves including:**
    - Building a new playground and kids dinky bike track at Townhead Park.
    - Building a skate park at Stewart McTaggart Park.
    - Building a new playground at Bulga Recreation Ground.
    - Building a new playground at James White Park representing the heritage of James White himself.
    - Installing new picnic seats and shelters at Bulga Recreation Ground and Lake St Clair.
- Participates in regular Tidy Towns Committee meetings. Singleton was a finalist in the 2019 Keep Australia Beautiful NSW Tidy Towns Awards in the Population category.

OUR HIGHLIGHTS

SEED LIBRARY

The Seed Library is an initiative that benefits the whole community. Creating a seed bank with active members borrowing and returning seeds strengthens our community's biodiversity with seeds adapted to the local area. It also saves money and brings together a community of gardening enthusiasts to share their knowledge. In the first month of launching, 210 seed packets have been 'borrowed' and several community members have donated various seed varieties from their own collections. The program runs alongside Council's sustainability and gardening workshops.

WOLLOMBI BROOK REHABILITATION PROJECT

Council is working with Hunter Local Land Services, Broke Bulga Landcare Group and landholders to improve the condition and health of the Wollombi Brook at Broke. The rehabilitation project has included weed control, re-establishing native vegetation species, addressing erosion, and fencing and structural works. Education initiatives, such as Broke Schools Enviro Day and project newsletters, have also been incorporated.

The Wollombi Brook rehabilitation project is supported by funding through the NSW Government's Environmental Trust and Hunter Local Land Services, with support from project partners Singleton Council and Bulga Coal.

210

seed packets have been borrowed since first month of launch

WATER

Our natural waterways are an important part of our community. We value and protect the quality of our water and health of our natural waterways.

RELEVANT COMMUNITY STRATEGIC PLAN STRATEGIES:

- Collaborate to enhance, protect and improve our environment
- Promote efficient water and waste management and increase reuse and recycling
- Collect and manage urban stormwater effectively
- Manage and reduce risks from environmental pollution and disease
- Increase the planning and preparedness for natural disasters

DATA SNAPSHOT

100%

POTABLE WATER QUALITY COMPLIANCE

51%

DECREASE IN COUNCIL WATER USAGE
(2019-20 – 2020-21)

18%

DECREASE IN RESIDENTIAL WATER USAGE (2019-20 – 2020-21)

15,561 KL

WASTEWATER RECYCLED BY COUNCIL (2020-21)

STATE

ENVIRONMENTAL INDICATOR	2017-18	2018-19	2019-20	2020-21	TREND
Water usage					
Water consumption (ML)					
• Residents	1,803.01	1,755.64	1,476.00	1,214.94	↑
• Commercial (excl. mining and farming)	664.53	826.70	814.00	622.40	∿
• Singleton Council	85.99	94.61	74.43	36.20	↑
Water use per residential dwelling (kL)	288.21	281.71	235.22	190.70	↑
Average water use per person (kL)*	115.28	112.68	94.09	76.28	↑
Water quality					
Compliance with potable water quality targets (%)**	100%	100%	100%	100%	–
Sewage Treatment Plant Outflow (EPL 3088) compliance (% results below limit)					
• Total Suspended Solids	100%	100%	100%	100%	–
• Total Nitrogen	100%	100%	100%	100%	–
• Total Phosphorous	100%	100%	100%	100%	–
• Oil and Grease	100%	100%	100%	100%	–
• Biochemical Oxygen Demand	100%	100%	100%	100%	–
• Escherichia coli	100%	100%	100%	100%	–
• Enterococci	100%	100%	100%	100%	–
• pH	50%	75%	58%	75%	∿
Saving water					
Number of water notice educational flyers mailed to residents	N/A#	N/A#	19,389	20,143	↑
Number of dual flush toilet rebates issued	N/A#	N/A#	10	24	↑
Total volume wastewater collected per connected property (kL)	160.32	159.36	181.30	224.71^	↓
Total effluent recycled by Council (kL)	N/A##	N/A##	N/A##	15,561	!

↑ Improving ↓ Not improving – Unchanged/stable ∿ Fluctuates ! Not applicable

ENVIRONMENTAL INDICATOR	2017-18	2018-19	2019-20	2020-21	TREND
Water and Sewer Services					
Number of residential water connections	6,243	6,232	6,275	6,371	−
Approximate number of waste/sewer customer connections serviced	5,519	5,521	5,555	5,580	−
Number of sewer surcharges/overflows (per 100km main)	1.97	16.09	15.52	13.46	^
Total number of trade waste permits operating (open approvals)	141	149	152	154	−

*Based on estimate of 2.5 people per dwelling. #Commenced 2019-20. ^Estimated value based on DPIE calculation formula. Storm water infiltration can influence this value significantly. **Excludes fluoride due to fluoride plant being offline from January 2019 until July 2020 for rebuild and recommissioning. ##Commissioned in February 2020.

WATER SUPPLY

The drinking water supplied by the Singleton Council reticulated water supply system is sourced from Glennies Creek Dam, which has a catchment area of approximately 22,475 ha. To maintain an effective water treatment system and high-quality drinking water, it is vital to keep the catchment and water storages free of pollutants and contaminants. Glennies Creek Dam is now owned and operated by WaterNSW.

In recent years, drought conditions in the Singleton region placed pressures on Glennies Creek Dam, the main source of water for the Singleton LGA. In October 2018, Council introduced voluntary level 1 (low) water restrictions. In June 2019, and in response to decreasing dam levels, Council introduced level 1 (low) water restrictions. With water levels at Glennies Creek Dam at 37.2%, Singleton moved to level 2 (moderate) water restrictions in March 2020 to conserve drinking water supplies. Singleton returned to level 1 (low) water restrictions from May 2021. Residents did a great job of responding to water restrictions with declines in usage during the drought conditions experienced in 2018-19 and 2019-20.

As part of Council's commitment to ensuring good water conservation practices, in June 2018 Council adopted a set of Water Wise rules. This set of three key water saving rules have been developed to promote awareness of our water usage, encourage responsible use of water resources and prevent waste and misuse of water. These rules are simple, common sense everyday actions to help save wasted water and reduce bills and apply to everyone who sources water from Council, residents, businesses and government alike.

WATER WISE RULES

THE THREE KEY RULES ARE:

1. **Watering with a sprinkler, irrigation system or hose is permitted any day before 10am or after 4pm. This avoids the hottest part of the day when water wastage occurs due to evaporation.**

2. **All handheld hoses must have a trigger nozzle attached.**

3. **No hosing of paths, driveways, concrete and other paved areas. Use a broom or blower.**

Scan the QR code to find out more permanent Water Wise Rules.

WATER QUALITY

Council continues to be 100% compliant with the Australian Drinking Water Guidelines for water quality and the NSW EPA licence for Sewage Treatment Plant outflow. Council is currently addressing algae growth in tertiary lagoons and trialling algae treatment processes to improve pH level results.

WATER USAGE

Singleton LGA

Residential water usage has been steadily declining over the last four years. Total residential water usage declined by 18% in 2020-21, to 1,214.94 ML. This is an average of 190.70 kL water used per household and 76.28 kL per person in 2020-21 (Fig. 15).

Residents responded positively to water restrictions during the drought. With increased rainfall and easing of drought conditions in late 2020-21, water usage continues to decline. This indicates that long term positive water saving behaviours are being adopted by residents.

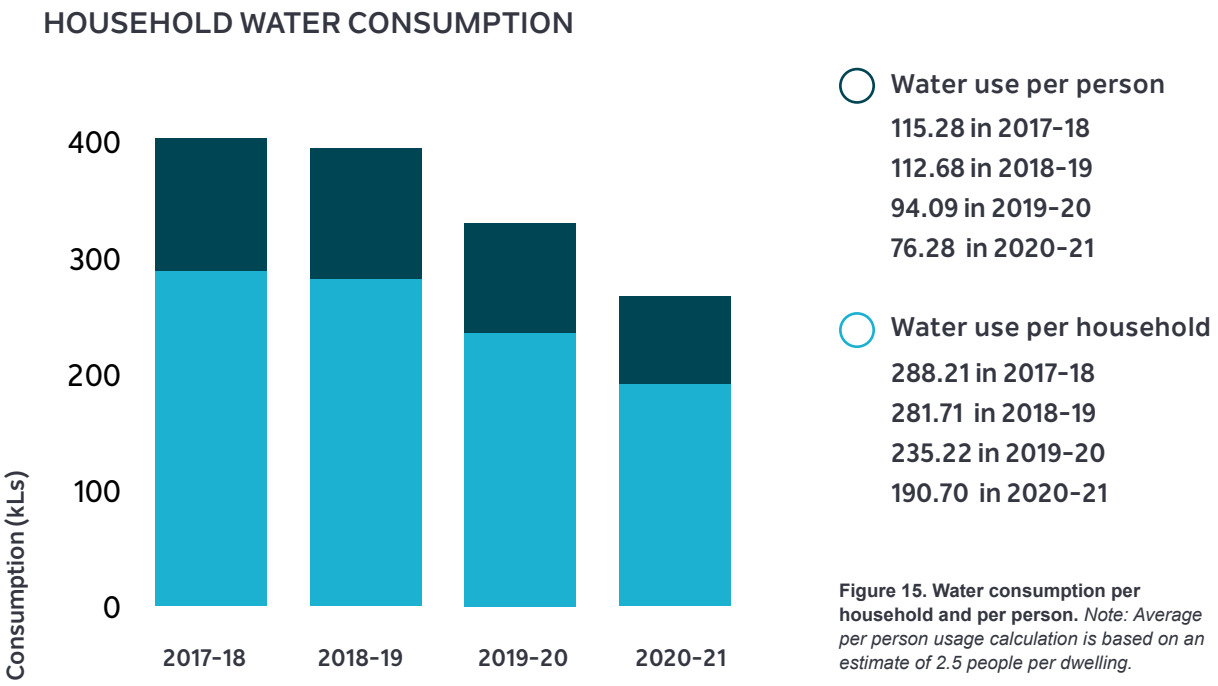


Figure 15. Water consumption per household and per person. *Note: Average per person usage calculation is based on an estimate of 2.5 people per dwelling.*

SINGLETON COUNCIL

Council's water consumption decreased by 51% in 2020-21 to a four-year low of 36.20 MLs (Fig. 16). Water consumption by Council facilities was higher in 2017-18 and 2018-19 due to the drought period that impacted the region. Less rainfall results in an increased demand for water and the need for irrigation. Following the end of the drought and recent increased rainfall over 2020-21, water consumption by Council facilities decreased significantly.

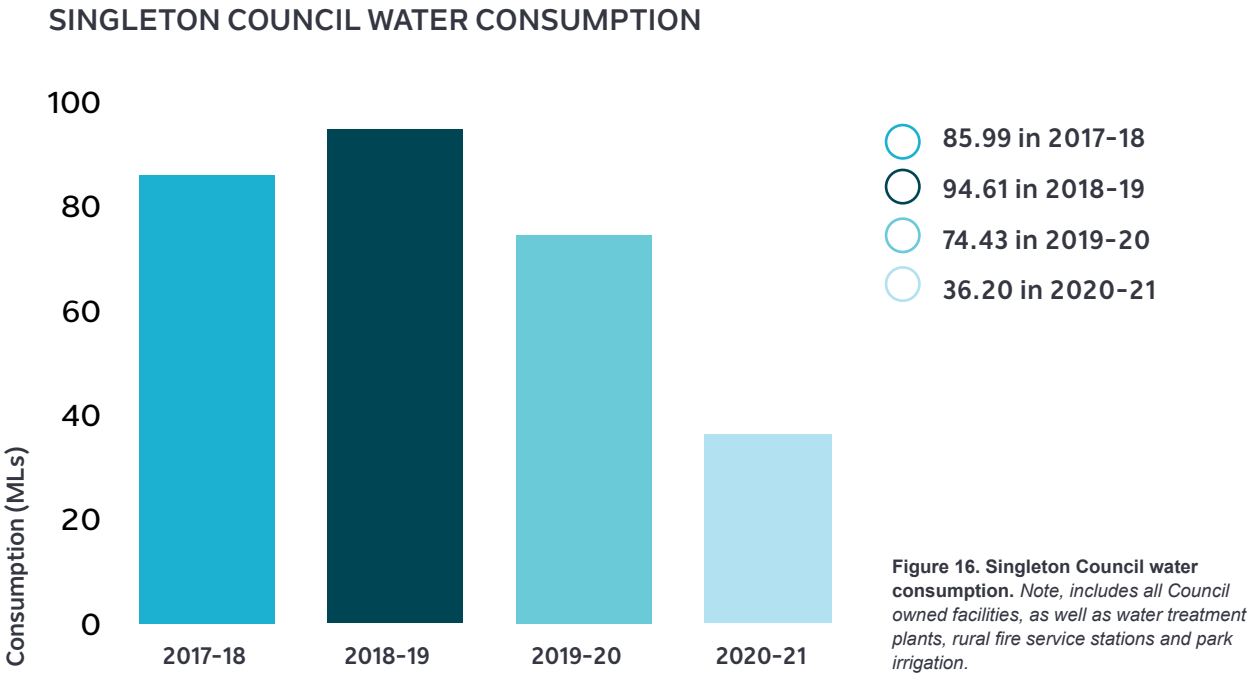


Figure 16. Singleton Council water consumption. *Note, includes all Council owned facilities, as well as water treatment plants, rural fire service stations and park irrigation.*

PRESSURE

Freshwater is a critical and irreplaceable resource. In Australia, our water resources are under pressure from:

- **Drought.** Droughts are a natural feature of the Australian climate. However, severe or prolonged droughts can place significant pressures on aquatic and terrestrial ecosystems, local communities and industries such as agriculture.
- **Climate change.** Climate change is driving climate variability, such as changes in rainfall patterns and temperatures. This climate variability makes it increasingly challenging to predict and manage future water availability.
- **Water quality.** Water quality may be impacted by pollution from human activities such as runoff from agricultural activities, water releases from mining operations and urban expansion. Water quality can be impacted by naturally occurring features such as algae blooms and saltwater intrusion. Water quality can also be affected by nutrients, such as nitrogen and phosphorus, when they exceed ecosystem needs.
- **Population and economic growth.** Urban growth places pressure on water supplies both directly (more homes and people) and indirectly (more food production and consumption and industrial use).
- **Poor water management.** Water extraction and changes to flow regimes can affect critical ecological processes that occur in natural waterways such as rivers.

Other pressures to in-land waterways include invasive species, catchment disturbance and infrastructure hazards.

WHAT CAN YOU DO?

Saving water is easier than you think… and a little goes a long way.

- **Take shorter showers. Using your phone timer, aim for a four-minute shower and use a low-flow showerhead.**
- **Place an empty tuna can on your lawn when watering your grass with a sprinkler system. When the tuna can is full, the grass has been sufficiently watered. It's better to water gardens and lawns in the morning and late evening. Avoid watering in the heat of the day.**
- **See a drip, get it fixed. A dripping tap can waste up to 20,000 litres of water a year.**
- **When purchasing a washing machine, make sure it has a water efficiency star rating of four or higher.**
- **Only use the dishwasher and washing machine when you have a full load.**
- **Purchase a toilet with a water efficient dual-flush and minimum of four-star rating. Choose the half flush when you use the loo.**

RESPONSE

SAVING WATER

Council:

- Undertook a water reuse project at the Sewage Treatment Plant to reduce potable water usage. The project will save an estimated 10,000kL of drinking water per year, saving the community over $20,000 each year.
- Installed two 22,500L concrete water tanks at Singleton Waste Management Facility to harvest rainwater for operational and firefighting purposes.
- Implemented Hydrawise, an app-controlled irrigation system for parks and fields that is saving Council hundreds of thousands of litres a year. Hydrawise also notifies Council employees of water leaks in the system, further reducing water wastage.
- Implemented water restrictions on 26 June 2019 for the first time implemented since 2007. Educational resources on the restrictions and water saving strategies were provided to the community. This included mailing 39,532 water notice educational flyers and 6,350 ‘Know Your Water Restrictions’ educational flipbooks to residents. Community education also included the adoption of Water Wise rules to reduce consumption which were promoted to the community.
- Implemented the Blue House interactive tool to educate about water saving tips which has received over 350 webpage visits.
- Has issued 34 dual flush cistern rebates to households to reduce water consumption.
- Implemented a recycled water treatment system at the new Animal Management Facility.

WATER QUALITY

Council:

- Has undertaken several initiatives to control blue-green algae outbreaks, including the installation of solar powered ultrasonic algae control units in tertiary lagoons, installation of UV disinfection plant at Sewer Treatment Plant discharge point and the installation of Low Energy, piped aeration system in tertiary lagoon, combined with ForEarth enzyme dosing. Council recently partnered with the University of Newcastle on a research project to better control blue-green algae outbreaks. The research and testing are currently being undertaken at the Singleton Sewer Treatment Plant.
- Is undertaking a Pollution Reduction Program project for reducing phosphorus concentrations in the treated effluent discharge to Doughboy Hallow from the Sewage Treatment Plant. Reducing phosphorus concentration is expected to have many benefits including protecting discharging environments, improving algae control, improving water quality for downstream users and pollutant load reduction. The project is due for completion in 2024.
- Reviewed, tested, updated and implemented the Pollution Incident Response Management Plan.
- Implemented a state-of-the-art online analyser system at the Obanvale water treatment plant to monitor water quality 24-hours a day.
- Installed stormwater quality improvement devices.

WATER SUPPLY

Council:

- Completed a capital upgrade of its sewage pumping stations and increased the emergency storage capacity to reduce the risk of overflows.
- Is developing an Integrated Water Cycle Management Plan.
- Participated in Upper Hunter Water Alliance meetings to develop a consistent approach to water and sewer management in the Upper Hunter.
- Has undertaken works to improve the Mount Thorley Raw Water Pump Station and commenced upgrades to the Major Sewer Pump Station, replacement of the Gowrie Reservoir and design of the Bulga water supply project.
- Completed a water main renewal program, replacement of the Minimbah Reservoir, upgrade of the automatic control system for the water and sewer network, and refurbishment of the sewage aeration ponds at Sewage Treatment Plant.
- Is involved in the Hunter Greater Water Strategy and projects to drought proof the Hunter.

OUR HIGHLIGHTS

CUTTING EDGE BLUE-GREEN ALGAE RESEARCH

Singleton Council's Water and Sewer team have dived into an experiment with the University of Newcastle that, if successful, could change the way blue-green algae outbreaks are controlled across the country. Blue-green algae is a problem in the Hunter Region, especially in the summer months, as it thrives off the nutrients in the wastewater.

The University is having success with a new organic product in farm ponds and rainwater tanks. The enzymes in the solution successfully compete with algae for nutrients, causing algae to disappear and not return for three to four months which is a promising result. If successful, the product will not just alleviate a chronic problem, but deliver significant cost-savings to councils. For Council, this could save hundreds of thousands of dollars in infrastructure works.

RECYCLED WATER SYSTEM INSTALLED AT ANIMAL MANAGEMENT FACILITY

Singleton Council implemented a recycled water treatment system at the new Animal Management Facility which will capture all wash down water and grey water, to be treated on site and reused again as washdown water. Along with water recycling, the design of the facility also incorporated sustainable design principles including building position and design to encourage air flow, solar power and the combination of high thermal mass materials and insulation to provide natural heating and cooling.

RECYCLED WATER REUSE PROJECT AT SINGLETON SEWER TREATMENT PLANT

A project to reuse water tanks as well as treated effluent aimed to cut down water usage at the Council facility with the biggest consumption of water by at least 50%.

The sewer treatment plant tallied up 18,000 kilolitres in 2018-19, leading the list of Council facilities in water usage above parks and gardens and the saleyards.

Completion of the $2 million UV disinfection treatment plant in September 2018 means Council can reuse treated effluent because the water is of a higher standard to clean down equipment at the plant, which was previously done with treated drinking water.

The UV disinfectant treatment plant eradicates bacteria from effluent to a significantly high level before it is then discharged. The solution will cut water usage by between 50 per cent and 70 per cent, delivering further cost savings of at least $15,000 per year.

WASTE

Growing community awareness of waste and the challenges of waste management has highlighted the importance of waste reduction, reuse, recycling and the need for a more circular economy.

RELEVANT COMMUNITY STRATEGIC PLAN STRATEGIES:

- Collaborate to enhance, protect and improve our environment
- Promote efficient water and waste management and increase reuse and recycling
- Manage and reduce risks from environmental pollution and disease

DATA SNAPSHOT

28%

OF WASTE IS RECYCLED IN SINGLETON
(2020-21)

18%

INCREASE IN TONNES RECYCLED
(2019-20 – 2020-21)

43%

INCREASE IN GARDEN ORGANICS RECYCLED
(2019-20 – 2020-21)

66

EDUCATIONAL SESSIONS CONDUCTED
(2017-21)

STATE

ENVIRONMENTAL INDICATOR	2017-18	2018-19	2019-20	2020-21	TREND
Waste and resource recovery					
Annual recycling rate (%)	31%	28%	29%	28%	
Annual waste to landfill rate (%)	69%	72%	71%	72%	
Total tonnes of waste landfilled^	12,451.63	12,062.69	11,752.13	14,552.09	
Tonnes of recyclable material diverted from landfill (t)#	5,657.30	4,709.48	4,896.89	5,771.11	
Tonnes of kerbside recyclables collected (yellow lid bin only) (t)***	1,765.23	1,513.48	1,486.81	1,323.03	
Tonnes of garden organics diverted from landfill (t)****	1,459.85	1,547.11	1,536.81	2,200.76	
Tonnes of recyclables collected through the Community Recycling Centre (CRC) (t)	23.80	23.67	17.80	22.07	
Tonnes of scrap metal recovered through the Waste Management Facility (t)	1,304.80	730.08	1,130.35	1,122.32	
Total waste generated per person per year (landfill and recycling) (kg)	787.79	729.64	724.28	884.12	
Waste landfilled per person per year (kg)	541.68	524.76	511.25	633.06	
Recycling per person per year (kg) #	246.11	204.88	213.03	251.06	
Kerbside recycling per person per year (yellow lid recycling bin only) (kg)	76.79	65.84	64.68	57.56	
Sustainability education					
Number of library sustainability workshops and education sessions	9 events	14 events	18 events, 12 online events	8 events, 5 online events	
Participation in library sustainability workshops and education sessions	237 attendees	283 attendees	273 attendees, 135 views (868 minutes)*	165 attendees, 42 views (287 minutes)*	

Improving Not improving Unchanged/stable Fluctuates Not applicable

Waste reduction initiatives					
Tonnes collected from annual chemical collection day event (t)	6.30	1.82	1.83	3.96	
Drums collected through DrumMuster program (kg)	1,510	620	410	1,160	
Tonnes diverted from landfill by Burragan Recycling Shop (t)	84.38	70.56	51.56	37.38	
Number of transactions at Burragan Recycling Shop	3,359	4,084	3,118	2,533	
Total revenue Burragan Recycling Shop ($)	$37,608	$27,462	$23,427	$23,354	
Number of families signed up to the DirtGirl Get Grubby program**	64				
Number of businesses in Singleton LGA that have participated in the NSW EPA Bin Trim program**	22				
Waste services					
Number of garbage services - domestic	8,699	8,871	8,978	9,125	
Number of recycling services - domestic	8,615	8,755	8,858	8,952	
Number of green waste services - domestic	6,728	6,798	6,822	6,880	
Number of garbage services - commercial	627	655	710	711	
Number of recycling services - commercial	664	682	733	638	
Number of green waste services - commercial	548	567	566	561	

*Livestream results. Some events were livestreamed due to the COVID-19 pandemic. ^Includes Waste Management Facility and contamination from kerbside recycling and organics recovery services. #Includes resources recovered through the Waste Management Facility, Community Recycling Centre, kerbside recycling, kerbside garden organics recovery, and chemical clean out day events. **Total results for reporting period. *** Decline indicative of the introduction of Contain Deposit Scheme, where such resources were recycled alternatively **** Increase indicative of change in climatic conditions (drought to wet period).

WASTE + RESOURCE RECOVERY

Most activities generate waste. Waste needs to be responsibly and appropriately managed to ensure it does not cause harm to human health and the environment.

Since the Industrial Revolution, we have taken natural resources from the ground to make products, used them, and, thrown them “away” when we no longer wanted them. We call this a linear economy. The truth is that there is no such thing as “away” – our waste must go somewhere.

On a planet with limited resources, dwindling landfill space, a growing population, and increasing concerns about the impact of waste on the environment, it is clear that things need to change. Reducing waste can save money, conserve resources, save energy and water, and reduce pollution. As a society, there is growing awareness and urgency of the need to reduce waste and transition to a circular economy.

A circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems. A circular economy prioritises better product design, reuse, repair, remanufacturing, and recycling, and focuses on regeneration and renewables. Shifting to a circular economy involves everyone: businesses, governments and individuals; cities, products and people.

In 2021, the NSW Department of Planning, Industry and Environment released the NSW Waste and Sustainable Materials Strategy 2041. The strategy sets out five targets for waste reduction and landfill diversion.

The targets are to:

- **Reduce total waste generated by 10% per person by 2030**
- **Have an 80% average recovery rate from all waste streams by 2030**
- **Significantly increase the use of recycled content by governments and industry**
- **Phase out problematic and unnecessary plastics by 2025**
- **Halve the amount of organic waste sent to landfill by 2030**

The NSW Government has also released the NSW Plastics Action Plan which sets out how we will phase out problematic plastics, tackle litter from plastic items like cigarette butts, and support innovation and research.

Locally, Singleton Council has released its Sustainability Strategy 2019-2027 which provides an integrated and coordinated approach to advancing sustainability efforts within our region. The strategy outlines Council’s adoption of Sustainable Development Goal 12: Responsible Consumption and Production and objective to maximise resource efficiency through avoidance, reduction, reuse, repurpose and recycling.

SINGLETON LGA

The Singleton community generated 20,323.20 tonnes of waste in 2020-21, of which 72% was sent to landfill and 28% was recovered and recycled (Fig. 17). The landfill and recycling rates in Singleton have remained largely consistent over the past four years (Fig. 17). This presents an opportunity to reduce waste to landfill and improve resource recovery in the region.

Singleton's per person waste to landfill is 633 kg in 2020-21. This is a slight increase on the previous year, following a downward trend since 2017-18. Positively, recycling per person per year is increasing year on year.

Compared to 2019-20, the total tonnes recycled increased 15% to 5,771.11 this year (Fig. 18). This increase can largely be attributed to the region's increasing levels of participation in the garden organics recovery service and the change in climatic conditions (drought to wet period). The amount of recycling collected through Council's kerbside recycling bin service has decreased slightly, which is due to the positive redirection of items to the NSW container deposit scheme 'Return and Earn'. An audit of kerbside recycling bins in 2019-20 shows a low contamination rate of only 3% (Fig. 19). The amount of waste landfilled through the kerbside general waste collection remains relatively stable over time (Fig. 20).

To further reduce the amount of waste going to landfill, Singleton will need to look towards reducing the volumes of red bin general waste and increase the recovery of valuable resources to ensure they are kept in the circular economy.

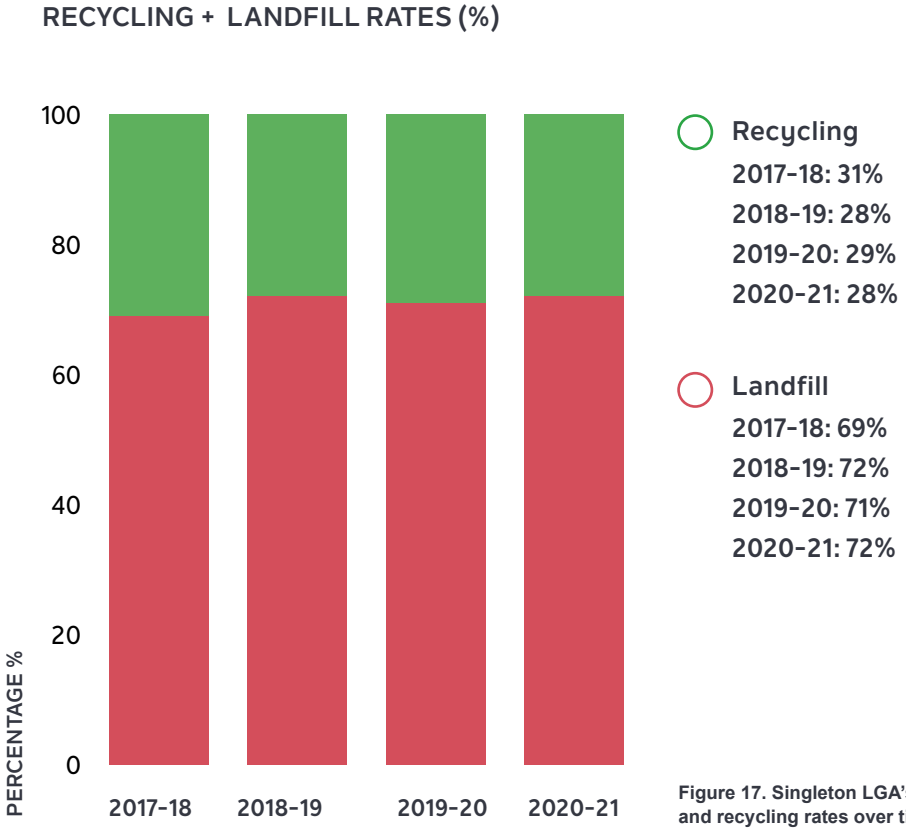
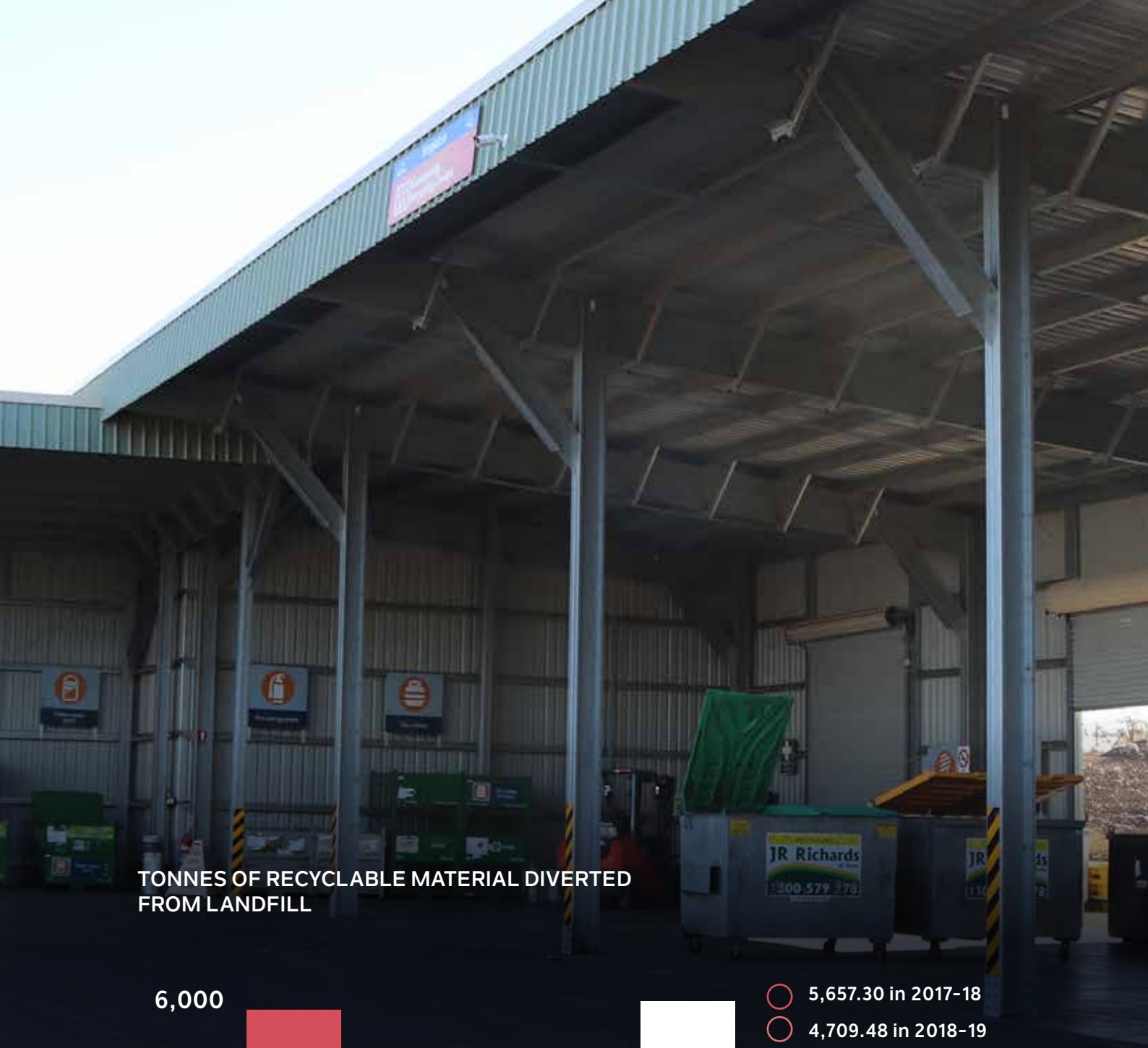


Figure 17. Singleton LGA's landfill and recycling rates over time.



TONNES OF RECYCLABLE MATERIAL DIVERTED FROM LANDFILL

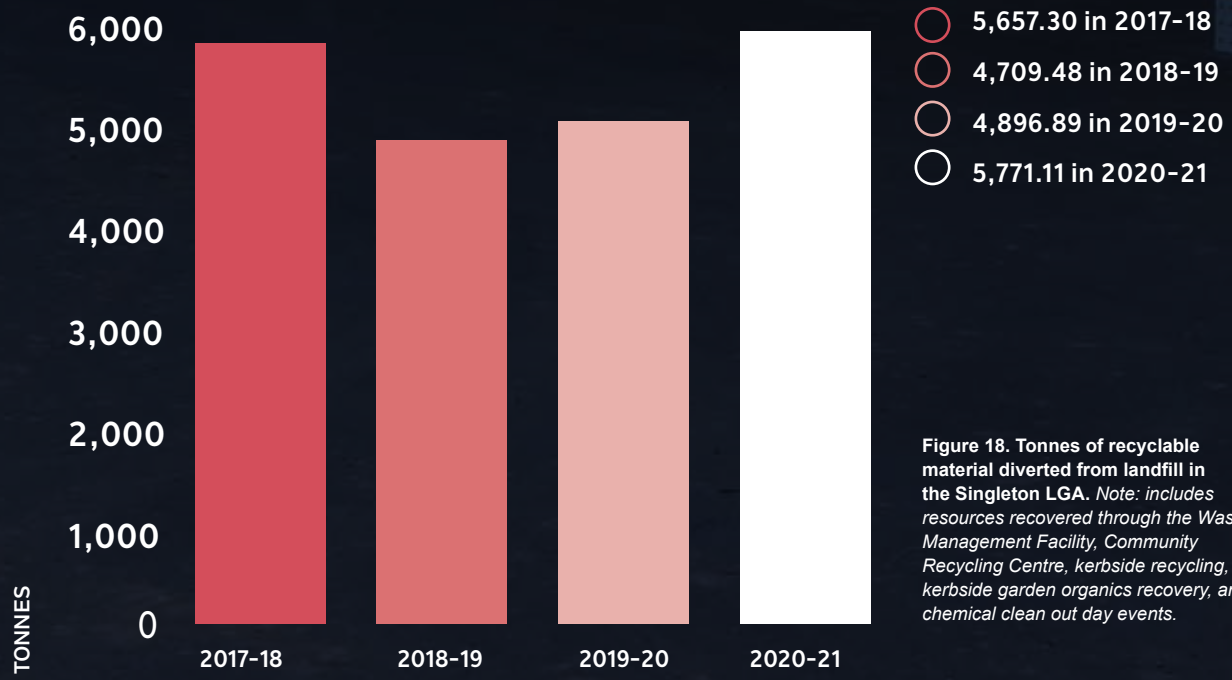


Figure 18. Tonnes of recyclable material diverted from landfill in the Singleton LGA. *Note: includes resources recovered through the Waste Management Facility, Community Recycling Centre, kerbside recycling, kerbside garden organics recovery, and chemical clean out day events.*

KERBSIDE COLLECTION BY BIN TYPE

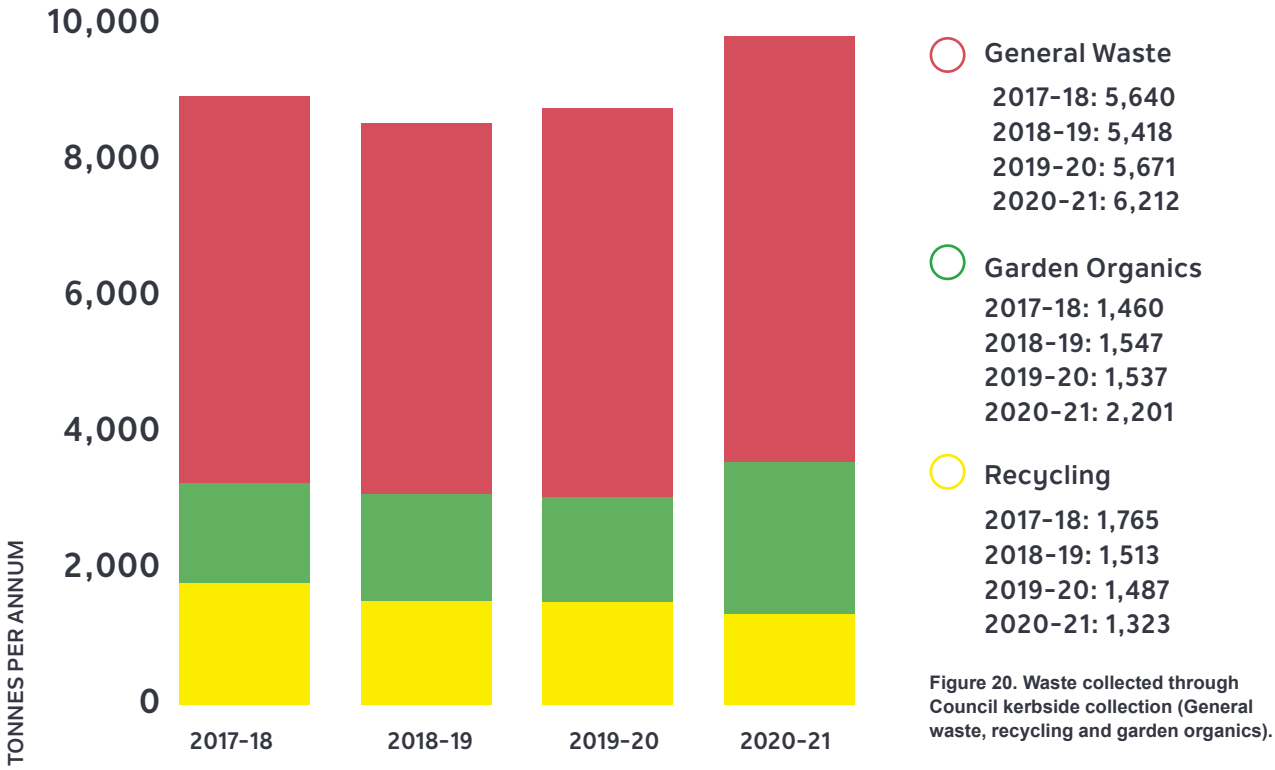


Figure 20. Waste collected through Council kerbside collection (General waste, recycling and garden organics).

KERBSIDE RECYCLING COMPOSITION
2019-20

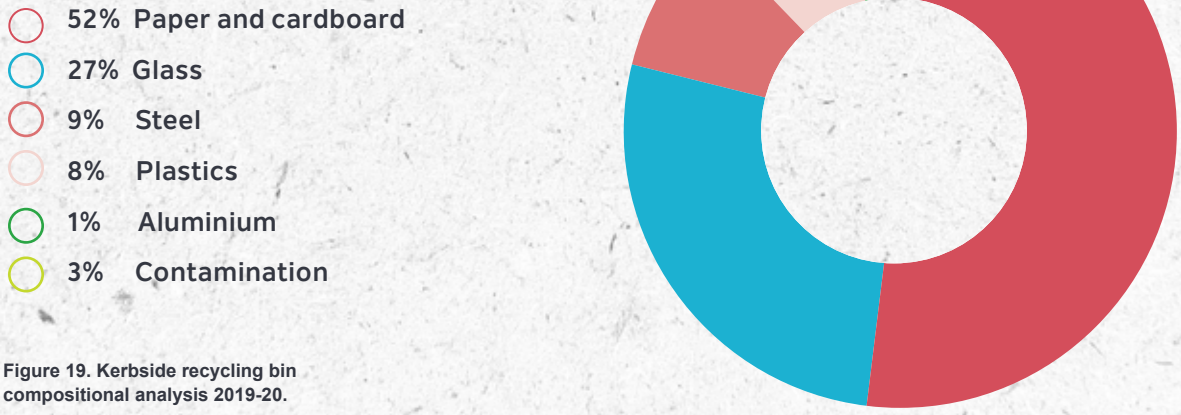


Figure 19. Kerbside recycling bin compositional analysis 2019-20.

PRESSURE

The management of waste operates in a dynamic environment, changing in response to community demand, government policy, technological development and market circumstances. Some of the current and emerging challenges for waste management include:

- **Population growth and economic growth.** Population growth tends to mean an increase in consumption of food, goods and resources, resulting in increased municipal solid waste (MSW) (NSW SOE 2018). Human behaviour strongly influences waste generation and the effectiveness of waste avoidance and resource recovery. Behaviours such as littering, illegal dumping and incorrect recycling behaviours cause pollution and loss of valuable resources. Increased economic activity tends to result in increases in construction and demolition (C&D) and commercial and industrial (C&I) waste (NSW SOE 2018). These factors will increase the amount of waste that governments need to manage in the future.
- **China's National Sword Policy.** Australia previously exported about a third of its recyclable material to China. In January 2018, China began enforcing its National Sword policy, introducing strict contamination limits and banning the importation of 24 types of waste. The Australian recycling industry, unable to meet the strict limits, is facing significant pressure in finding alternative markets for this material. Limited processing, manufacturing and end markets in Australia further exacerbates these pressures.
- **Problem wastes.** Certain waste streams are hazardous to human health and the environment, including electrical waste, chemicals, asbestos and batteries. Suitable infrastructure is needed to effectively collect, treat and manage problem wastes and the community must be aware of these systems and able to access them.
- **Microplastics.** Microplastics are an emerging problem waste of particular concern. Microplastics can occur deliberately, such as the manufacture of microbeads for personal care products, or through the degradation of larger plastic items. Microplastics do not biodegrade and therefore are accumulating in the environment. Microplastics leach harmful chemicals, attract toxins, are consumed by fish and other species and are making their way into the human food chain, with consequences for human health (NSW SOE 2018).
- **COVID-19 pandemic.** There have been reports of changes in waste generation patterns due to the pandemic, suggesting an increase in household waste generation and a reduction in commercial and industrial (C&I) waste (AWE 2020). However, it is too soon for clear trends to be evident.

WHAT CAN YOU DO?

Reduce your household waste

- Go single-use plastic free! Start by saying ‘no’ to the four most common single-use plastic items: plastic shopping bags, plastic straws, takeaway coffee cups (these are lined with a thin layer of plastic) and plastic water bottles. Once you’ve mastered these, move onto other single-use plastics, such as produce bags, plastic cutlery, and takeaway containers.
- Collect and recycle your soft plastic packaging, such as bread bags, chip packets and cereal liners. Drop off your clean and dry soft plastic at the REDcycle bins located at Coles and Woolworths supermarkets for recycling into new products, like park benches.
- To reduce food wastage, plan your meals and always take a shopping list when grocery shopping.
- Help keep Singleton a tidy town and participate in Clean Up Australia Day.
- Repairing household items instead of replacing them can be a great way to reduce waste and save money.
- Take 3 for the Sea: Take 3 pieces of rubbish with you when you leave the beach, waterway or anywhere and you have made a difference.
- Remember, you can recycle the following waste streams at Singleton Council’s Waste Management Facility:

  - Car batteries
  - Cardboard and paper
  - Drums
  - E-waste
  - Fire extinguishers
  - Fluoro globes and tubes
  - Gas bottles
  - Green waste
  - Household batteries
  - Mattresses
  - Motor oils and other oils
  - Paint
  - Polystyrene
  - Scrap metal
  - Smoke detectors
  - Soft plastic
  - Tyres

RESPONSE

SUSTAINABILITY EDUCATION

Council:

- Launched the Sustainability Hub on the Singleton Council website in early 2021. The Sustainability Hub provides a space dedicated to all things sustainability with the goal of educating the community, coordinating activities and providing information and tools required to stimulate positive behaviour change within our community. The Hub has had over 360 webpage visits since launching in April 2021.
- Delivered 66 workshops (either face to face or online) through the library to educate the community about environmental topics and encourage positive behaviour changes. There were a total of 958 attendees and 1,155 minutes of online educational content viewed.
- Developed a series of sustainability programs for the community including the Dirt Girl Get Grubby for Families online program. To date, 64 families have signed up to the Get Grubby program.

RESOURCE RECOVERY

Council:

- Implemented soft plastic recycling. Residents dropped off their clean and dry soft plastic to the Council Administration Building, Library, Visitor Information Centre or Waste Management Facility. In total 14.36 tonnes of soft plastic material was diverted from landfill for recycling into new products such as bench seats and plastic picket fencing.
- Commenced on-site primary processing of polystyrene using a polystyrene extruder to ensure recycling of material.
- Commenced free tyre and mattress drop-off days to encourage recycling and reduce illegal dumping.
- Has processed 13,094 customer transactions through the Burragan Recycling Shop, resulting in the diversion of 244 tonnes from landfill and supporting the reuse of goods.
- Hosts annual Chemical Cleanout Days where residents can bring in their old and unwanted household chemicals to be disposed of or recycled for free.
- Implemented a Garden Organics service in March 2017. All material collected is diverted for processing and used to produced quality compost.
- Facilitated 14 compost giveaways through the Garden Organics Service, totaling 1358 bags of compost.
- Carried out six Garden Blitz projects Garden Blitz projects were carried out through the Garden Organics Service, including Singleton Heights School playground rejuvenation, ground preparation of National Tree Day in Singleton Heights, Singleton Community Gardens, Collen Gale Children's Centre bush tucker garden, Landcare Singleton Heights and landscaping at the Waste Management Facility.

CIRCULAR ECONOMY

Council:

- Installed 14,000 fence pickets at Howe Park made from recycled plastic including soft plastic such as plastic bags collected by the community.
- Provides sustainability services through the library, including a cake tin library, seed library, toy library service, succulent garden, digital book and audiobook service and craft upcycling and recycling.
- Donates unwanted weeded library material to the James Bennett Sustainability Project for donating to communities in need, recycling into new products or reuse through resale.
- Diverted over 130 tonnes of used pavers from landfill during the Town Centre upgrade by giving away 80,000 pavers to the community including charities, churches and not-for-profits.

WASTE SERVICES

Council:

- Installed solar powered, Wi-Fi enabled, automatic compacting bins (smart bins) at Riverside Park thanks to funding by the NSW EPA Better Waste and Recycling Fund.
- Installed three 22,500L water tanks at Singleton Waste Management Facility to harvest rainwater for operational and firefighting purposes.
- Continued service provision to the community throughout the COVID-19 pandemic and lockdowns.

OUR HIGHLIGHTS

SUSTAINABILITY HUB

The Singleton Sustainability Hub is your guide to all things sustainability in Singleton. Whether you're just embarking on your sustainability journey, are already a local sustainability champion or you simply want to stay informed about sustainability efforts in your hometown, the Hub is where it's at. The Hub seeks to drive innovation, education and ultimately inspire deliberate sustainable behaviours to achieve effective, long-lasting results for our environment and our community now and for generations to come. On the Hub, the community can find information about Council sustainability programs, local activities and events and resources for residents looking to embark on their own journey in sustainable living.

Scan the QR code to visit the Sustainability Hub

SUSTAINABILITY AT SINGLETON LIBRARY

When it comes to sustainability, Singleton Library has you covered. In addition to improving your knowledge through books, audiobooks and documentaries, you can utilise the cake tin library, seed library, toy library service and succulent garden! These are just some of the services offered by the library to help residents reduce waste and their carbon footprint. The library also offers educational workshops, with over 66 sessions delivered in the last four years on environmental topics.

COUNCIL GIVES NEW LIFE TO 80,000 OLD PAVERS

During the upgrade of Singleton's Town Centre, over 130 tonnes of old pavers were removed from John Street. Council was determined to see this resource reused in the community and ensure not one paver ended up in landfill. Council organised a paver giveaway, and over 80,000 pavers were donated to the community including charities, churches and not-for-profits to reuse in their projects.

HERITAGE

Singleton has rich Indigenous and non-Indigenous cultural heritage. Heritage includes buildings, items, works, relics, places and landscapes of historic, scientific, cultural, social, archaeological, natural, spiritual, architectural or aesthetic significance.

RELEVANT COMMUNITY STRATEGIC PLAN STRATEGIES:

- Collaborate to enhance, protect and improve our environment

DATA SNAPSHOT

4

PROTECTED ABORIGINAL PLACES

6,347

RECORDED ABORIGINAL CULTURAL HERITAGE SITES

156

HERITAGE ITEMS IN SINGLETON LGA

37

HISTORIC BUILDINGS ON THE SINGLETON HERITAGE WALK

ABORIGINAL HERITAGE

The Wonnarua/Wanaruah people are the traditional owners of land that the Singleton LGA covers, with their lands extending throughout the Upper Hunter Valley. The Wonnarua/ Wanaruah have occupied the Upper Hunter for at least 30,000 years, with traditional knowledge revealing that their occupation extends back to the early stages of the Dreaming. The Singleton LGA contains an expanse of places and objects of Aboriginal cultural and scientific importance which are subject to legislated conservation and protection requirements.

ENVIRONMENTAL INDICATOR	2020-21
Number of Aboriginal Cultural Heritage sites in Singleton LGA recorded on the Aboriginal Heritage Information Management System (AHIMS)1	6,347
Number of Aboriginal Places in Singleton LGA[2]	4

ENVIRONMENTAL INDICATOR	2017-18	2018-19	2019-20	2020-21	TREND
Singleton Council NAIDOC Week event participants	30 attendees	750 attendees	2,875 online reach*	N/A^	↑
Singleton Council National Reconciliation Week event participants	30 attendees	40 attendees	30 attendees. 4,816 online reach*	30 attendees. 1,951 online reach*	↑
Number of Aboriginal Heritage Impact Permit applications issued or varied3	0	1	0	1	−

***Livestream results. Events were livestreamed in 2019-20 due to the COVID-19 pandemic.**
^Event postponed due to COVID-19 pandemic

[1.] The Aboriginal Heritage Information Management System (AHIMS) contain records of Aboriginal places and objects, referred to as Aboriginal sites. AHIMS sites generally contain Aboriginal objects (physical items) which are protected under the National Parks and Wildlife Act 1974 (AHIMS 2021).

[2.] Aboriginal Places are a place of very high and special significance to Aboriginal people. Often, they have special cultural or spiritual significance and tend to be nominated by the Aboriginal community. An Aboriginal Place is gazetted by the minister and endorsed by the Aboriginal Cultural Heritage Advisory Committee (ACHAC).

[3.] The Aboriginal Heritage Impact Permit (AHIP) Public Register lists Aboriginal Heritage Impact Permit applications, including permits that have been issued, varied, transferred, surrendered, suspended and revoked under sections 90P and 188F of the National Parks and Wildlife Act 1974. (AHIP 2021)

↑ Improving ↓ Not improving − Unchanged/stable ∿ Fluctuates ! Not applicable

Aboriginal heritage is linked closely with the natural environment and contains traditions and assets, both tangible and intangible. The strong relationship between Aboriginal people and their lands makes culturally appropriate management of Country and its resources a critical part of protecting Aboriginal cultural values. The Singleton LGA is rich in Aboriginal cultural heritage and formal identification of items and places of Aboriginal cultural heritage is required to ensure they are not disturbed or destroyed by development and land use change without consultation with the Aboriginal people.

The NSW Government works in partnership with Aboriginal communities to conserve Aboriginal cultural heritage. Identifying and listing items of heritage significance are the first steps in protecting and managing those places and objects.

Singleton is home to four recorded Aboriginal Places: the Baiame Cave, St Clair Mission Church School and Corroboree Ground, and Redbourneberry Hill (AHIMS 2021). These Aboriginal Places are recorded on the Aboriginal Heritage Information Management System (AHIMS) as places of special cultural or spiritual significance to Aboriginal people. In addition, 6,347 Aboriginal sites have been recorded in the AHIMS database for the Singleton LGA.

Council recognises the importance of celebrating and sharing the rich culture, history, stories and achievements of Australia's First People in the community. Participation in Singleton Council's NAIDOC Week and Reconciliation Week events continue to grow year on year. The COVID-19 pandemic has limited attendance over the past two years however livestreaming of the ceremonies has enabled greater participation in the events.

PRESSURE

Several factors present challenges for the protection and management of Aboriginal heritage across Australia. These pressures include development, land use change, lack of awareness or understanding of cultural significance, tourism and erosion.

Urban development, land use change and industries, such as mining, agriculture and forestry, can place great pressure on sensitive Indigenous heritage, sites and landscapes. Other activities, such as tourism, vandalism and erosion, can degrade Aboriginal sites. These pressures can lead to incremental, and sometimes inadvertent, destruction. Legislation, heritage registers and heritage assessments are in place to aid the protection of Aboriginal sites, objects and places of significance from damage or destruction.

Efforts to increase awareness and understanding about cultural significance in local communities is necessary to ensure the ongoing celebrating, sharing and valuing our Indigenous culture and history. Advocating for the pursuance of traditional practices and knowledge of place, spirit and values is necessary to avoid loss of traditional cultural practice, knowledge, social connections and language.

It is important that Aboriginal heritage and culture is appropriately recognised and protected through legislation, government policies and ongoing relationships with Aboriginal people.

WHAT CAN YOU DO?

- **Learn and understand more about local Aboriginal and Torres Strait Islander Peoples' histories, cultures, languages, practices and land management techniques.**
- **Acknowledge the value of Aboriginal people and their long, rich cultural and spiritual connections to the Singleton area. An Acknowledgement of Traditional Owners can be done by anyone. It's a way of showing awareness of, and respect for, the Aboriginal Traditional Owners of the land where a meeting or event is held.**
- **Support local Indigenous organisations and participate in Indigenous events such as NAIDOC Week.**

RESPONSE

Council has undertaken several initiatives with the objective of enhancing and protecting Aboriginal Heritage over the past four years. Council:

- Developed the Singleton Aboriginal Reconciliation Committee Action Plan 2020-21.
- Hosts NAIDOC Week and National Reconciliation Week events to celebrate the history, culture and achievements of Aboriginal and Torres Strait Islander peoples.
- Delivered a new Indigenous learning space at the Colleen Gale long day care centre. The space includes a 'yarning circle' and bush tucker garden that will provide children with a first-hand experience of local native plants and stimulate the development of knowledge about traditional Aboriginal life as well as other cultures. Educators also undertook 'A Place for Culture' cultural training about our Indigenous past and heritage which will be incorporated into educational programs when utilising the new space.
- Developed a Welcome to and Acknowledgement of Country Request Form to be completed for any major event conducted on Council owned lands, at Council events and within Council facilities. This will assist the Singleton Aboriginal Reconciliation Committee in providing advice on culturally appropriate activities and support the request. Protocols have been adopted throughout Council in all forms of communication.
- Developed the new Wanaruah Park in consultation with the local Aboriginal community. The park features Aboriginal art elements, Acknowledgement of Country and is home to multiple remains of Aboriginal ancestors.
- Hosts and participates in regular Aboriginal Committee meetings along with the Wanaruah Local Aboriginal Land Council. The Committee provides a forum for ideas and discussions on a wide range of issues, especially those affecting the Aboriginal Community.
- Encourages local farmers and land managers to attend cultural burn training and demonstrations. The demonstrations, hosted by NSW Local Land Services, teach traditional cultural burning land management practices and how these might benefit restoration and management of woodland remnants and understorey on farms.
- Encourages the addition of local Aboriginal language into the registry for new road and street names.
- Installed Acknowledgement of Country plaques at the Council Administration Building and Wanaruah Park with additional plaques planned for additional Council facilities including the library in 2021-22.
- Provided funding for an Indigenous Employment Pathways Advisor for 12 months as part of the Resources For Regions Round 7 Singleton Worker Pathways Program. The program is a skills development initiative to help displaced and vulnerable workers access career counselling, skills development for new roles and advice on how to start a new business. The program will run during 2021 and 2022.

OUR HIGHLIGHTS

NAIDOC WEEK

Singleton Council celebrates NAIDOC Week each July to celebrate the rich history, diverse cultures and achievements of Aboriginal and Torres Strait Islander peoples as the oldest continuing cultures on the planet. The Upper Hunter NAIDOC Week Awards are held every two years to celebrate the achievements of Aboriginal and Torres Strait Islander people of the Upper Hunter. In 2018-19, over 750 people attended the event.

NAIDOC Celebrations

750 people in attendance in 2019, we then reached over 5000 views of our live stream events across 2020 and 2021

WANARUAH PARK

Singleton Council paid homage to traditional land owners with the new Wanaruah Park playground officially opened in December 2020. The park was designed in consultation with the local Aboriginal community to reflect the spirit of the Wonnarua/Wanaruah, with Aboriginal art elements and an Acknowledgement of Country incorporated in the equipment. Every element from the design to colour choice have been selected with Aboriginal heritage in mind to reflect the significance of the site. The land on the site is significant as it is home to multiple remains of Aboriginal ancestors who were removed from the Upper Hunter post colonisation.

COMMUNITY GARDEN

Singleton's community garden revitalisation project in 2019 saw the creation of a native bird habitat haven, replant of the bush tucker and Indigenous learning circle. The Indigenous garden provides traditional edible and medicinal plants that can be used for learning and education. Compost and soil conditioner were sourced from the garden organics service to demonstrate how our waste from the garden organics bin goes back into our community gardens.

NON-ABORIGINAL HERITAGE

Non-Aboriginal heritage refers to use of the land since European settlement. Singleton has an extensive history of European settlement that is reflected in a large number of heritage buildings and sites. At present there are over 200 items of heritage significance in Singleton that are listed under NSW or Commonwealth legislation. Objectives and processes for protecting heritage sites and places are included in Council's Development Control Plan and Council's Local Environment Plan (SCESSAP 2016).

ENVIRONMENTAL INDICATOR	2020-21
World Heritage List/National Heritage List	2
Commonwealth Heritage List	1
Register of the National Estate	60
Number of items listed on the State Heritage Register for the Singleton LGA	12
Number of heritage items in the Singleton LGA	156
Number of heritage conservation areas in the Singleton LGA	2
Number of archaeological sites in the Singleton LGA	7
Number of heritage grants approved	3
Value of heritage grants issued ($)	$11,646

ENVIRONMENTAL INDICATOR	2017-18	2018-19	2019-20	2020-21	TREND
Number of development applications referred to Heritage Consultant	6	22	31	38	
Number of development application approvals on heritage items	6	20	20	16	
Permits for tree removal in heritage areas	0	2	0	3	
Number of heritage buildings on statutory heritage lists demolished	0	0	1	1	

Improving Not improving Unchanged/stable Fluctuates Not applicable

Council facilitates the Mount Thorley Warkworth Historic Heritage Fund. These grants are designed to assist all residents and community groups of the Singleton LGA wishing to advance public, private and community heritage, small or large in nature, under the following broad categories:

- **Community Heritage Projects**
- **Major Works**
- **Heritage Reports**
- **Heritage Emergency Works**
- **Education**
- **Technology**

In 2020-21, $11,646.09 in grant funding was provided to the community through the Mount Thorley Warkworth Historic Heritage Fund to help heritage property owners maintain and improve their heritage properties. The grants are assessed by the Singleton Heritage Advisory Committee with guidance given by the Heritage Advisor.

The number of development applications (DA) for heritage properties referred and approved has been increasing over time. This positive trend reflects the community's desire to protect, renew and ensure ongoing maintenance of these significant sites. Anyone proposing to carry out an activity which may impact upon the heritage significance of an item, place or heritage conservation area must investigate, assess and report on the harm that may be caused by that activity.

PRESSURE

In Australia, pressures on heritage buildings and places may include:

- **Development.** Major infrastructure projects, development and increased urban density may threaten the survival of heritage places or jeopardise their cultural values through inappropriate changes or collateral damage. Some historic heritage places are perceived as redundant or incapable of new use, creating pressures to demolish or redevelop (Australia SOE 2016). This may be exacerbated by a lack of understanding about cultural significance. Major industrial activities, such as resource extraction, can place pressure on both natural and cultural heritage places when there is a disparity in perceived value between development and heritage conservation.

- **Tourism.** Heritage is an important tourism attraction. However, over visitation or inappropriate visitor behaviour can harm heritage values. The conservation of heritage places and their use as tourism attractions must be balanced.

- **Climate change.** Damage to historical buildings and places may occur due to increases in the frequency and severity of extreme weather events. Collateral damage can also occur from rescue or clean-up activities, and loss of financial and human resources (Australia SOE 2016).

WHAT CAN YOU DO?

Visit the Singleton Historical Museum. Housed in the old Council Chambers built in 1874 within picturesque Burdekin Park, the Singleton Museum is living history. Originally built as a jail, the cells now hold artefacts including an original horse drawn ambulance cart, furniture, farm machinery and kitchenware. A visit truly is a trip back in time, with something for everyone.

Singleton is a delightful mix of history, country hospitality and modern sophistication. The town boasts beautiful gardens, historical and cultural sites, vineyards and modern wineries. Explore all this at your own pace on Heritage Walk Tour with the digital tour guide.

RESPONSE

Council:

- Approved Arts and Culture Strategy 2020-2030.
- Developed Heritage Development Guidelines to support reuse and redesign of local heritage items in the LGA. As a result of the guidelines, Council is beginning to see positive adaptive reuse of heritage buildings such as the old council chambers and the old bank building in John Street.
- Launched the digital Singleton Heritage Walk Tour guide. Over 1,139 have visited the webpage since it was launched.
- Celebrated Singleton's bicentenary with a whole-of-community commemoration focusing on the history of St Patricks Plains with the arrival of the exploration party, led by John Howe and including two Aboriginal guides along with Benjamin Singleton, on 15 March 1820.
- Upgraded the James White Park using heritage-listed sandstone from 1861.
- Provided a local heritage assistance fund to issue grants for local heritage maintenance and improvements. In 2020-21, $11,646.09 in grant funding was provided to the community. Mount Thorley and Warkworth grants have been helping heritage property owners maintain and improve their properties. Grants have included community spaces such as Tennis Courts and private homes listed on the Singleton Local Environment Plan. The grants are assessed by the Singleton Heritage Advisory Committee with guidance given by the Heritage Advisor.
- Contributed to the Hunter Valley vineyards heritage scoping workshop and agreed on a goal to gain World Heritage status for the Hunter Valley's heritage vineyards and root stock. Council examined the areas involved and put forward ideas as to how zoning and development activity would be achieved.
- Completed a restoration project on the Singleton Museum to ensure the preservation and safety of Singleton's historical artefacts and culture for generations to come.
- Endorsed the Arts and Culture Strategy 2020-2030.
- Records photographic information on Heritage sites as a permanent electronic resource for safekeeping.
- Delivered the Living Laneways project.
- Hosts and participates in monthly Heritage Committee meetings.

OUR HIGHLIGHTS

LIVING LANEWAYS

The Living Laneways project is about activating community spaces that might be better used in alternate forms or by enhancing and complimenting what is currently done. Burns Lane is adjacent to two heritage listed properties and is one of the lanes earmarked for the project. Heritage advice and input was provided into the concept design and has been implemented accordingly to achieve a positive outcome.

JAMES WHITE PARK REVITALISATION

Council upgraded the James White Park using heritage-listed sandstone that previously formed the curb and guttering in York and Pitt streets in downtown Singleton. The sandstone, which could have originally been installed as early as 1861, has been reused to form a border around the new multi-purpose basket swing play area, matching existing edging.

SINGLETON HERITAGE WALK

Singleton is a delightful mix of history, country hospitality and modern sophistication. The town boasts beautiful gardens, historical and cultural sites, vineyards and modern wineries. There are currently 37 historic buildings that stand to tell the tale of the rich heritage the Singleton region has to offer. The Heritage Walk lets visitors and residents explore all this at their own pace using the digital Singleton Heritage Walk Tour guide. Over 1,139 have visited the Heritage Walk Tour webpage since it was launched.

GLOSSARY

µg/m^3	Micrograms per Cubic Meter. A microgram is equivalent to a millionth of a gram or a thousandth of a milligram.
Aboriginal Place	A place of very high and special significance to Aboriginal people. Often they have special cultural or spiritual significance and tend to be nominated by the Aboriginal community. An Aboriginal Place is gazetted by the minister.
ABS	Australian Bureau of Statistics.
ACHAC	Aboriginal Cultural Heritage Advisory Committee.
AHIMS	Aboriginal Heritage Information Management System (AHIMS) sites generally contain Aboriginal objects (physical items) which are protected under the National Parks and Wildlife Act 1974.
AHIP	Aboriginal Heritage Impact Permit.
Algae bloom	Dense and visible growth of algae in a waterbody, resulting from proliferation caused by increased nutrients (such as phosphorus) and/or warm weather, generally resulting in reduced oxygen availability in the water for other organisms and possibly release of toxic substances.
Archaeological site	A place that contains one or more relics.
AWE	Australian Department of Agriculture, Water and Environment.
Biodiversity	The variety of all life forms: the different plants, animals and microorganisms, the genes they contain and the ecosystems they form.
BOM	Bureau of Meteorology.
C&D	Construction and demolition waste.
C&I	Commercial and industrial waste.
CO_2	Carbon dioxide.
CO_2-e	Carbon dioxide equivalent. Carbon dioxide equivalent is a metric measure used to compare the global warming potential (GWP) of various greenhouse gases relative to the concentration of CO_2 (which is defined as having a GWP of 1). For example, methane is 25 times more effective than CO_2 at heating the atmosphere and therefore has a GWP of 25; thus five tonnes of methane is equivalent to 5 × 25 = 125 tonnes of CO_2 (NSW SOE 2018).
Conservation Agreement	A conservation agreement is an agreement between the owners of land and the State Government that all or part of their land is not used for residential, farmland or business purposes. The rates are adjusted so that the portion not used is non-rateable. A conservation agreement provides the opportunity for land to be protected and conserved.
CRC	Community Recycling Centre.
CSP	Community Strategic Plan.
EPL	Environment Protection Licence.
EV	Electric vehicle.
Extinct species	A species is presumed to be extinct when it has not been recorded in its known or expected habitat in NSW over a time-frame appropriate to its life cycle and form.
Fragmentation	The division of continuous habitat by the clearing (or disturbance) of native vegetation for human land-use activities, which isolates the remnant patches of natural vegetation and the species within them and limits the passage of organisms and genetic flow between populations.

Greenhouse gases	Atmospheric gases, including carbon dioxide, methane, chlorofluorocarbons, nitrous oxide, ozone and water vapour, which trap heat reflected from the Earth's surface.
Ha	Hectare.
Heritage conservation area	An area of land of heritage significance. Council's Local Environmental Plan (LEP) identifies Heritage Conservation Areas that are areas of land that contain sites, streetscapes, built forms and subdivision patterns representative of important periods and events in local and regional history.
Heritage item	A building, work, place, relic, tree, object or archaeological site the location.
Invasive species	A general term for plants, animals, weeds or other organisms such as pathogens that are introduced to places outside their natural range, where they negatively affect local ecosystems and species.
kL	Kilolitres.
kW / kWh / kWp	Kilowatt / Kilowatt hour / Kilowatt peak.
LGA	Local government area.
Lux	A measure of light intensity.
mg/L	Milligrams per litre. This measurement is the mass of a chemical or contaminate per unit volume of water.
ML	Megalitre.
MSW	Municipal solid waste.
MW / MWh	Megawatt / Megawatt hour.
NSW DPIE	New South Wales Department of Planning, Industry and Environment.
NSW EPA	New South Wales Environment Protection Authority.
NSW OEH	New South Wales Office of Environment and Heritage (Superseded by NSW DPIE).
NSW SOE	New South Wales State of the Environment.
Pest animal	An animal (usually non-native) having, or with potential to have, adverse environmental, economic, or social impacts.
PM_{10}	Particulate matter particles measuring less than 10 microns in diameter.
$PM_{2.5}$	Particulate matter particles measuring less than 2.5 microns in diameter – these particles are a sub-set of PM_{10}.
SCESSAP	Singleton Community Environmental Sustainability Strategy and Action Plan (Superseded by the Singleton Sustainability Strategy).
SDGs	Sustainable Development Goals.
SOE	State of the Environment.
Threatened species	A generic term for any species listed as having a high threat of extinction under the Biodiversity Conservation Act 2016 or the Fisheries Management Act 1994, due to a reduction in population size, restricted geographical distribution or there being few mature individuals in the population. Threatened species are listed in one of four categories in increasing order of severity: vulnerable; endangered; critically endangered; extinct.
UHWA	Upper Hunter Weed Authority.
UNEP	United Nations Environment Programme.
UNFCCC	United Nations Framework Convention on Climate Change.
Weed	A non-native plant or native plant removed from its natural habitat having, or with the potential to have, negative environmental, economic, or social impacts.

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