

Newcastle

ENVIRONMENT

Strategy

Roadmap to a
sustainable Newcastle

2023



City of
Newcastle

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Cover image: Ironbark Creek rehabilitation

Acknowledgement of Country

City of Newcastle (CN) acknowledges its Local Government Area (LGA) sits within the Country of the Awabakal and Worimi peoples. We acknowledge that Country for Aboriginal peoples is an interconnected set of ancient relationships. We acknowledge the custodianship of the Awabakal and Worimi peoples and the care and stewardship they have performed in this place since time immemorial. We recognise the history of truth that acknowledges the impact of invasion and colonisation on Aboriginal and Torres Strait Islander people and how this still resonates today.



Caring for Country

CN supports the Uluru Statement from the Heart to champion constitutional change and come together to support a First Nations voice.

Our Aboriginal and Torres Strait Islander tribes were the first sovereign Nations of the Australian continent and its adjacent islands, and possessed it under our own laws and customs. This our ancestors did, according to the reckoning of our culture, from the Creation, according to the common law from 'time immemorial', and according to science more than 60,000 years ago.

This sovereignty is a spiritual notion: the ancestral tie between the land, or 'mother nature', and the Aboriginal and Torres Strait Islander peoples who were born therefrom, remain attached thereto, and must one day return thither to be united with our ancestors.

This link is the basis of the ownership of the soil, or better, of sovereignty. It has never been ceded or extinguished and co-exists with the sovereignty of the Crown.

How could it be otherwise? That peoples possessed a land for sixty millennia and this sacred link disappears from world history in merely the last two hundred years?

(Excerpt from Uluru Statement from the Heart 2017)





We continue to advocate in support of large-scale initiatives to transition towards clean energy including supporting the Newcastle Offshore Wind Zone and the Renewable Energy Zone, while working with our partners in the Federal Government on the establishment of the National Net Zero Authority to protect local jobs.

Since the watershed Pathways to Sustainability International Conference held in Newcastle in 1997, under the leadership of former Lord Mayor Greg Heys, and just two months after the announcement of the imminent closure of the BHP steelworks, we have recognised that we must take local action towards addressing global challenges. Through the NES, and our local, national and international collaborations, we recognise the important role cities play in creating a sustainable future, and how our local action will contribute to global change.

We are an active member of global networks and initiatives aimed at prioritising real action to address climate change. We have championed implementation of the United Nation's Sustainable Development Goals and we are a member of the Global Covenant of Mayors for Climate and Energy, an international alliance of cities promoting climate change action. We were also a pioneering city in pledging support for the Malmo Commitment, which positions local governments at the centre of the global response to the climate and nature emergencies and were one of the first cities to join the ICLEI Australia chapter of Cities With Nature, a shared global platform that encourages cities to incorporate nature-based solutions into urban planning and development.

We recognise that the United Nations has declared this decade 'The Decade of Action' for achieving the Sustainable Development Goals. The NES supports this call to action by contributing to the implementation of the Sustainable Development Goals and responding to the triple planetary crises of climate change, nature loss and pollution.

CN is a leading government authority in Australia when it comes to implementing strong and decisive initiatives to address climate change, which is why we have already formally committed to the principles and targets of the Paris Climate Agreement. We will continue to provide regional leadership in implementing the Sustainable Development Goals and responding to the triple planetary crises at the local government level.

Through our NES, we will act local, think global.

Councillor Nuatali Nelmes
Lord Mayor of Newcastle



A message from our CEO

The United Nations body for assessing the science related to climate change is the Intergovernmental Panel on Climate Change. In 2021, the IPCC's latest report defined a climate tipping point as a "critical threshold beyond which a system reorganises, often abruptly and/or irreversibly".

The use of the word irreversibly places into context the gravity of what the NES is attempting to prevent from occurring. The latest science tells us that a climate tipping point could be reached in the event of a just 1.5°C degree increase in global temperature. By 2030 maximum temperatures in the Hunter are projected to rise by 0.7°C and continue to rise by 2°C by 2070. This will result in an average of 5 more days above 35°C per year by 2030 and 14 more days above 35°C per year by 2070. More specifically, erosion of our coastline will expediate as we have already started to see at Bar Beach, Dixon Park and Merewether Beach. Other avoidable impacts will include a decline in organic matter, a loss of biodiversity, and rising sea levels leading to an increased number of homes being identified as flood prone.

Globally, the triple planetary crises of climate change, nature loss and pollution has delivered to our current leaders a responsibility to make transformative change now or forever be the generation that history will hold accountable for allowing the world to reach a point where broken systems can no longer be repaired.

Our elected Council has for many decades been a leader in responsible environmental activism. Last year we celebrated the 25th anniversary of the Newcastle Declaration, a historic declaration signed in our city and presented to the United Nations to demonstrate local governments' commitment to sustainable development. We have long championed local climate action and have led the development of natural asset and urban tree management systems. We are proud of our environmental achievements to date, but we also know that there is more work ahead of us than behind us, if we are to address our global challenges.

The NES provides the roadmap for addressing our global environmental challenges and building a liveable and sustainable city over the next ten years. We will enhance the delivery of our existing large and diverse portfolio of environmental works and programs. We will also increase investment in our community. We will continue our leadership role in responding to climate change by reducing our own organisational emissions, supporting our community to reduce their emissions, and encouraging innovation and new low carbon industries. We will build a climate resilient city by continuously improving our knowledge of climate change risks, integrating the risks into our organisational decision making, and designing and developing our city in response to the risks.

We will demonstrate organisational leadership by improving circularity and resource recovery in our operations and supply chain. We will support and advocate for industry, business and community to transition to a circular economy.

CN is committed to applying an adaptive management approach, where we will continuously improve by learning from the outcomes of our practices. We will share and promote our progress, innovative outcomes and achievements in implementing the NES.

We look forward to working together to create a more liveable and sustainable city.

Jeremy Bath
CEO of City of Newcastle

A message from our Lord Mayor

CN has long been a local government leader when it comes to protecting our precious natural environment, while investing into progressive actions to ensure our city is more sustainable for all. From our world class beaches to Blackbutt Reserve, from the river foreshore to our local parks and green open spaces, our environment underpins the Newcastle lifestyle.

Our shared community vision, *Newcastle 2040*, reflects the importance of the environment to all Novocastrians. We want Newcastle to be an even more sustainable city, where we value our natural environment and continue to take decisive action at the local level to respond to challenges like climate change, biodiversity loss, and the overuse of resources. The Newcastle Environment Strategy (NES) is our definitive roadmap for achieving our progressive environmental ambitions. Through this strategy, we are sending a signal to the community that we are strongly committed to protecting and enhancing Newcastle's natural environment today, and for future generations of Novocastrians.

Already, we have taken significant steps to reduce the city's emissions. With our 5MW solar farm at Summerhill and more than 900KW of solar power capacity installed across 16 sites, we ensured that in January 2020, CN became the first New South Wales council to be powered by 100 per cent renewable electricity.

CSP priority

CSP objectives

What we want to accomplish and the outcomes CN wants to achieve for a sustainable Newcastle.



Action on climate change



Nature-based solutions



Circular economy

NES strategic priorities

Our key focus areas for achieving a sustainable Newcastle over the next 10 years

Supported by Four-year Delivery Plan (Appendix 1)

Transition City of Newcastle (CN) operations to net zero emissions through the electrification or use of low emissions alternatives for our vehicles, plant and equipment, and reducing operational emissions at Summerhill Waste Management Centre.

Support the transition of the Newcastle Local Government Area to net zero emissions through an accelerated uptake of onsite solar and batteries; electric or zero emissions transport and buildings; community renewable energy and battery storage projects; and the transformation of business and industry.

Expand our understanding of local climate risks on our built and natural environment and our community and integrate evidence-based climate risk management into organisational decision making, investment planning and service delivery.

Apply adaptive management to urban planning and development, infrastructure design and natural area management in response to increased climate risks from flooding, coastal erosion and inundation, storms, heatwaves, heat stress, drought, and bush and grass fires.

Apply the Intergovernmental Science- Policy Platform on Biodiversity and Ecosystem Services (IPBES) Nature Futures Framework (Nature for Nature, Nature for Society and Nature for Culture) to guide projects and initiatives that respond to the climate change, nature loss and pollution crises.

Build a network of high quality blue and green spaces that connects town centres, public transport hubs, schools and residential areas (a blue green grid) for enhanced liveability and biodiversity outcomes.

Improve circularity and resource recovery in CN's operations and supply chain, and support and advocate for industry, business and the community to transition to a circular economy.

NES indicators and targets

Measuring our success and tracking our progress towards a sustainable Newcastle.

Appendix 2

← ↑ number of community actions undertaken to benefit the environment as a result of participating in CN programs and initiatives →

<p>Net zero emissions from CN operations by 2030.</p> <p>100% ↓ in city-wide GHG emissions from electricity by 2030.</p> <p>↑ number of people using CN's flood alert system.</p> <p>Improvement in CN climate risk and resilience evaluation framework indicators.</p>	<p>EV car sales ↑ to 52% of total car sales by 2030-31.</p> <p>↑ solar PV uptake in Newcastle LGA.</p> <p>No one street and park tree species represent more than 10% of the tree population (biannual).</p>	<p>20% of CN bushland areas in excellent condition by 2033.</p> <p>Two strategic biodiversity corridor gaps protected or enhanced annually at a landscape scale.</p> <p>Annual length of watercourses rehabilitated.</p> <p>↑ satisfaction with our blue, green and wild spaces.</p>	<p>40% tree canopy cover in the Newcastle LGA by 2045.</p> <p>30% road reserve, and 30% open space, canopy cover by 2045.</p> <p>↓ three-year average trend in potable water use in CN operations.</p> <p>↑ overall Water-Sensitive Cities Index Score.</p>	<p>Improvement in CN sustainable procurement evaluation framework indicators.</p>
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Strategic links to NES

Newcastle Climate Action Plan
Our Sustainable Waste Strategy
Newcastle Transport Strategy
On Our Bikes Cycling Plan
Climate Change Risk and Resilience Plan (supports delivery of NES)

Urban Forest Action Plan (supports delivery of NES)
Water-Sensitive City Action Plan (supports delivery of NES)
Blue Green Grid Action Plan (supports delivery of NES)

Newcastle Climate Action Plan
Our Sustainable Waste Strategy

Newcastle

ENVIRONMENT

Roadmap to a sustainable Newcastle

Strategy 2023



Our Newcastle

Our city, our people

Newcastle is located about 160km north of Sydney. It is Australia's seventh-largest city and is the heart of the Greater Newcastle Region, the largest regional centre in NSW.

Our population

Newcastle population 2021

169,317

Population by 2041

201,113

Greater Newcastle population 2021

604,115

Population by 2041

773,825

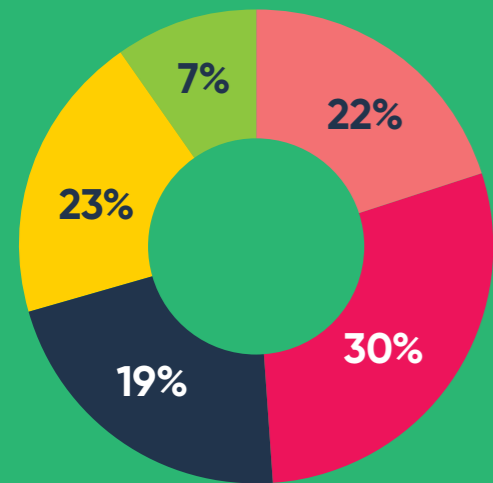
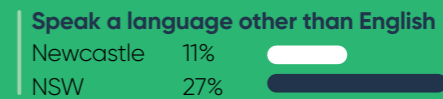
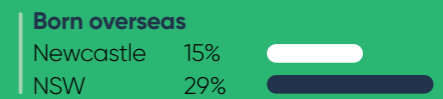
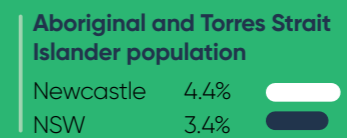
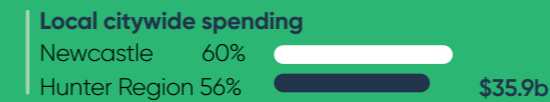
Planning NSW Population Projections, forecast.id



Estimated annual population growth rate
1.18% (2021-2022)



(Research undertaken commissioned by CN using data from REMPLAN 2022)



Income by households (p/week)

- low income < \$886
- lower to middle income \$87 to \$1,824
- middle to upper income \$1,825 to \$3,134
- high income earners \$3,135+
- haven't stated their income

Top 3 industry sectors by employment

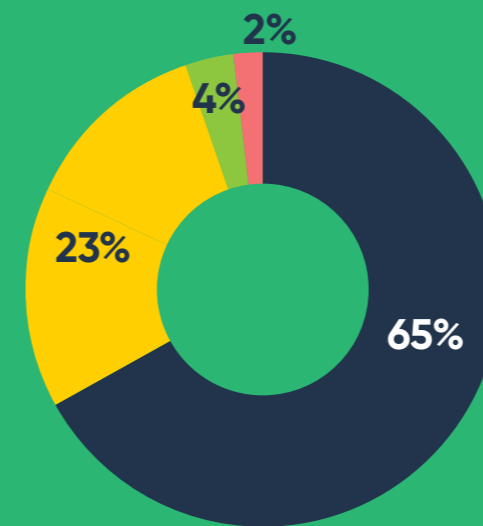
- Healthcare and social assistance – creating **20,293** jobs
- Education and training – creating **9,789** jobs
- Retail trade – creating **8,803** jobs

102,800 jobs in Newcastle

- 49% live within LGA
- \$1,802 (p/week) average household income
- 4.9% unemployment rate
- 53.5% journey to work by car

36,331 businesses

- 30% of the Hunter's developed industrial space
- 80% of the Hunter's office space



How we travel

- car
- worked at home
- walk/ride
- public transport

- 1 ferry – Queens Wharf to Stockton
- 2.7km light rail, with 6 stations
- 127 transport shelters
- 850km of roads
- 52 suburbs
- 2.34 people average household size
- 78.4% internet access at home
- 33% of dwellings are medium or high density
- 28.3% of residents fully own their home; 29.4% have a mortgage; 35.6% are renting
- 40% recycling rate

Our environment

Newcastle is home to unique and diverse natural areas, including beaches, coastal headlands, wetlands, mangrove forests, rainforest gullies and bushland.

Our city is defined by the water that surrounds us. We have world-class beaches at our doorstep, and the Hunter River flows from the largest coastal catchment in NSW¹ to the sea in our city. Local waterways, including Ironbark, Throsby and Cottage Creeks, wind their way through our suburbs, and we are home to one of the largest expanses of coastal wetlands in south-eastern Australia, with around one third of the Newcastle LGA covered by wetlands.

Our city is also home to a mosaic of bushland. Expansive areas of bushland provide core fauna habitat at Glenrock State Conservation Area, Blackbutt Reserve, Jesmond Bushland, Blue Gum Hills Regional Park and surrounds. Smaller areas of public and private bushland provide tenuous corridors between our core patches of bushland.

The bushland and wetlands in the north-west of our LGA, including Mount Sugarloaf, Pambalong Wetland and Black Hill Bushland, contribute to the regionally significant Watagans to Stockton biodiversity corridor.

Newcastle retains a rich and diverse array of flora and fauna, including threatened species.

Over 30 vegetation communities have been mapped in our LGA, and we are home to nine endangered ecological communities, including Freshwater Wetlands, coastal Themeda grasslands and Lower Hunter Spotted Gum Ironbark Forest. Around 100 threatened plant and animal species have been recorded in our city², including the pink flowering shrub Black-eyed Susan and the critically endangered Scrub Turpentine, which are found in our bushland parcels.

¹ NSW Water, *Hunter*, accessed 1 May 2023.

² NSW Environment and Heritage, *Bionet Atlas*, accessed 17 April 2023.

Natural landscape features and known sacred sites include:

Whibayganba

Whibayganba is Newcastle's famous landmark, Nobbys. It is said that a notorious kangaroo jumped from Tahlbhn Point, at the site now known as Fort Scratchley, to the safety of Whibayganba. The kangaroo remains hidden in the island's bowels occasionally thumping its tail and making the land tremble. The thumping is said to be a reference to the region's earthquake activity.

Yi-ran-na-li

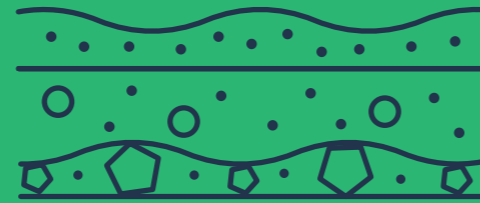
There is also a high cliff at South Newcastle beach named Yi-ran-na-li, renowned for being a fearful place. Yi-ran-na-li must be respected by all, and no one should linger or speak in its vicinity because of the danger of falling rocks.



The Superb Fairy Wren inhabits many of our suburban gardens and the threatened Powerful Owl, the largest owl in Australasia¹, nests in the large trees of our bushland remnants. The nationally threatened Grey-Headed Flying-Fox graces our evening skies with camps found in the rainforest pockets of Blackbutt Reserve and the mangroves of Throsby Creek. Families of the threatened Squirrel Glider move through the trees of our larger bushland remnants at night, including Blue Gum Hills Regional Park and Blackbutt Reserve.

The Hunter River estuary is recognised as the most important migratory shorebird habitat in NSW, and our internationally important (Ramsar) estuarine wetlands provide habitat for threatened species and migratory shorebirds. The Bar-tailed Godwit can be found enjoying the summer months in our estuary before returning to the northern hemisphere for breeding². The Godwit has recorded the longest non-stop migration by a bird, travelling 13,560km from Alaska to Tasmania without stopping³. Our estuary is also a key fish and prawn nursery, supporting fisheries for hundreds of kilometres along the Pacific coast.

Whilst our environment retains significant biodiversity values, it has experienced extensive and rapid change over the past 200 years. We have transitioned from a penal colony in the early 1800s to Australia's seventh largest city. During this time agriculture, mining, heavy industry and urban development have all impacted our environment, leading to habitat loss and fragmentation, the introduction of invasive species and a legacy of contamination.



The living part of soil is a critical part of every ecosystem, and is vital for maintaining fertility, species diversity and resilience in natural ecosystems. Soil biodiversity, including symbiotic fungi and mycelium, is increasingly recognised as being important for human health and wellbeing because healthy soils can suppress disease-causing soil organisms and positively influence the quality of food, air and water⁴.



Pollinators play a vital role in our ecosystems, with almost 90% of the world's flowering plants and 75% of the world's food crops depending on pollinators. Worldwide, more than 20,000 species of bees and many species of butterflies, flies, moths, wasps, beetles, birds, bats and other animals contribute to pollination⁵ (IPBES 2016).



1 NSW Environment and Heritage, 2022, *Powerful Owl – Profile*.

2 Department of Climate Change, Energy, the Environment and Water, *Limosa lapponica*, accessed 17 April 2023.

3 Guinness World Records, 2023, The record-breaking bird that flew from Alaska to Australia without stopping.

4 Wall, D.H., Uffee, N.N., and Johan, S. 'Soil biodiversity and human health'. *Nature*, 528, 69-76 (2015).

5 IPBES, 2016. Press Release: *Pollinators Vital to Our Food Supply Under Threat*.

Environmental features of the Newcastle LGA



26% canopy cover (excluding waterbodies)



10 beaches



117,000 CN street and park trees

80 kilometres of creeks on CN land

98 threatened plants and animals



8,600 hectares of wetlands in lower Hunter Estuary



9 endangered ecological communities

3,000 hectares of internationally important (Ramsar) wetlands

11.8 hectares of coastal *Themeda* grasslands



65 CN managed wetlands, covering **200** hectares



91 CN managed bushland parcels, covering **512** hectares

4.5 kilometres of sand dunes

1,513 CN habitat trees

23 priority weed species



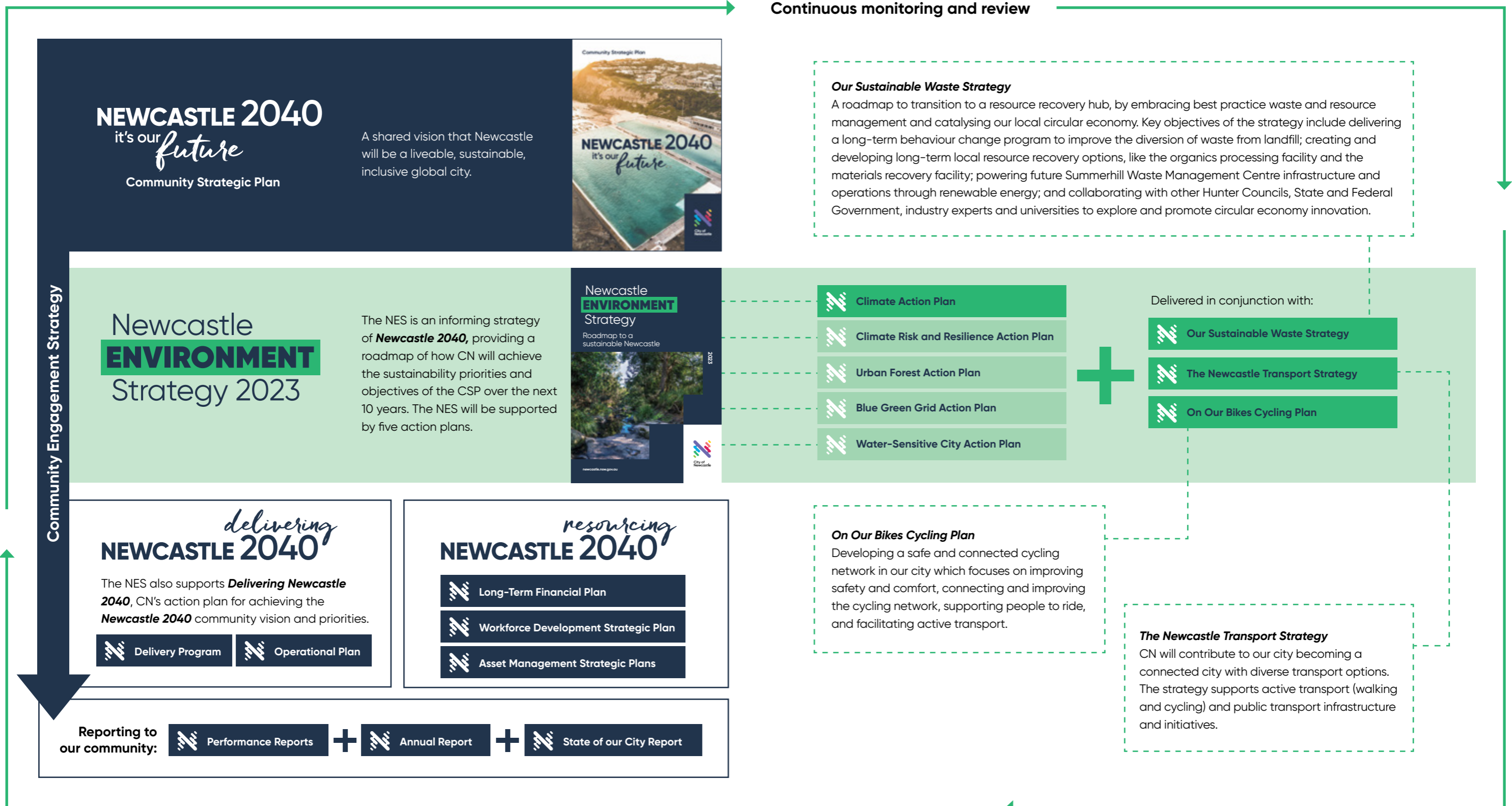
106 CN nest boxes



83% of our residents living within **500** metres of a natural area

From local to global

How the NES aligns with other strategies and plans



Continuous monitoring and review

Our Sustainable Waste Strategy

A roadmap to transition to a resource recovery hub, by embracing best practice waste and resource management and catalysing our local circular economy. Key objectives of the strategy include delivering a long-term behaviour change program to improve the diversion of waste from landfill; creating and developing long-term local resource recovery options, like the organics processing facility and the materials recovery facility; powering future Summerhill Waste Management Centre infrastructure and operations through renewable energy; and collaborating with other Hunter Councils, State and Federal Government, industry experts and universities to explore and promote circular economy innovation.

- Climate Action Plan
- Climate Risk and Resilience Action Plan
- Urban Forest Action Plan
- Blue Green Grid Action Plan
- Water-Sensitive City Action Plan

Delivered in conjunction with:

- Our Sustainable Waste Strategy
- The Newcastle Transport Strategy
- On Our Bikes Cycling Plan

On Our Bikes Cycling Plan

Developing a safe and connected cycling network in our city which focuses on improving safety and comfort, connecting and improving the cycling network, supporting people to ride, and facilitating active transport.

The Newcastle Transport Strategy

CN will contribute to our city becoming a connected city with diverse transport options. The strategy supports active transport (walking and cycling) and public transport infrastructure and initiatives.

Community Engagement Strategy

delivering NEWCASTLE 2040

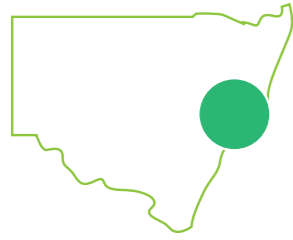
The NES also supports **Delivering Newcastle 2040**, CN's action plan for achieving the **Newcastle 2040** community vision and priorities.

- Delivery Program
- Operational Plan

resourcing NEWCASTLE 2040

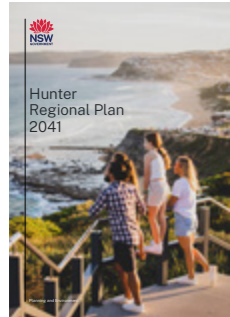
- Long-Term Financial Plan
- Workforce Development Strategic Plan
- Asset Management Strategic Plans

Reporting to our community: Performance Reports + Annual Report + State of our City Report



Delivered at the regional level

The NES supports the **Hunter Regional Plan 2041** and **Greater Newcastle Metropolitan Plan 2036**, two key regional planning documents that outline the vision, goals and actions needed to achieve greater prosperity for all people who live, work and study in the Hunter Region.



The NES also supports the following regional strategies and plans:

Hunter JO Strategic Plan 2032

Greater Hunter Regional Water Strategy

Greater Newcastle Future Transport Plan

Hunter Regional Strategic Weed Management Plan 2023–2027



Delivered at the state level

The *NSW Local Government Act 1993* details the guiding principles for council decision-making, specifying that:

- Councils should consider the long-term and cumulative effects of actions on future generations
- Councils should consider the principles of ecologically sustainable development.

The NES supports the NSW Government's:

- **Net Zero Plan Stage 1: 2020–2030**, to fast-track emissions reduction over the next decade and prepare NSW to take further action in the decades to follow.
- **Electric Vehicle Strategy**, to drive uptake and reduce barriers for electric vehicle (EV) purchases, to increase EV sales to 52% by 2030–31 and to help NSW achieve net-zero emissions by 2050.
- **Climate Change Adaptation Strategy**, which provides a framework that will strengthen and expand action to adapt to climate change now and over the long term.
- **Biodiversity Conservation Program**, which outlines strategies for assisting threatened species, populations and ecological communities.

Through the NES, CN will continue to deliver its coastal management program (CMP) in accordance with the NSW Coastal Management Manual, which provides technical information and guidance to assist councils in addressing the requirements of the *NSW Coastal Management Act 2016* and a risk management process for councils to follow when preparing a CMP.

CN will also continue to deliver its flood risk management program in accordance with the NSW Flood Prone Land Policy and Floodplain Development Manual, which guides local government in managing flood risk in their communities.



Delivered at the national level

Ecologically sustainable development is economic growth that supports preservation of the environment and natural resources, now and forever. ESD is enshrined in the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* with the principles:

- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making
- Improved valuation, pricing and incentive mechanisms should be promoted

The NES supports the Federal Government's:

National Climate Resilience and Adaptation Strategy

National Waste Policy Action Plan

Strategy for Nature 2019–2030

Creating Places for People: An Urban Design Protocol for Australian Cities



Delivered at the global level

CN recognises there is a global climate emergency and that we require a rapid transition away from fossil fuel-based industries towards a low carbon economy, if we are to meet the global **Paris Agreement** commitment to “hold the increase in the global average temperatures to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change”.

CN is a long-standing member of Local Governments for Sustainability (ICLEI). CN has pledged support for **The Malmo Commitment**, focusing on strategies towards a climate neutral future, resilient and healthy communities, equitable and inclusive communities and sustainable finance and innovation.

CN is a member of the **Global Covenant of Mayors for Climate and Energy**, an international alliance of cities with a shared long-term vision of promoting voluntary action to combat climate change and the transition to low-emission and resilient societies. The Global Covenant now includes over 10,000 cities from 120 countries, representing over 970 million people and 12.4% of the total global population, and is the largest global network of councils leading action on climate change. CN has also taken the **Cities Race to Zero** and **Cities Race to Resilience** pledges.

CN is a pioneer city of the ICLEI Australia chapter of **Cities With Nature**, which is a shared global platform that encourages cities to incorporate nature-based solutions into urban planning and development. CN is one of seven founder councils of the **Cities With Nature Academy**.

CN is a founding member of **CIFAL Newcastle** which is a United Nations Institute for Training and Research (UNITAR). CIFAL's purpose is to build the capacity of cities and communities with a focus on integrating Sustainable Development Goals and implementing disaster risk reduction and public health strategies.

The Hunter Estuary wetlands are listed as Wetlands of International Importance under the Ramsar convention. Migratory birds from these wetlands are protected by three international agreements: **JAMBA**, **CAMBA**, and **ROKAMBA**. In 2024, CN will celebrate the 30th anniversary of the **Kushiro Sister Wetland Agreement**, which aims to raise public awareness of the importance of the sister wetlands of the Hunter Estuary and Kushiro and share knowledge and research between countries.

Our global commitment

In September 2015, 193 countries committed to the United Nations Sustainable Development Goals (SDGs). These goals provide a global roadmap for all countries to work towards a better world for current and future generations.

CN immediately declared our support and intention to deliver the SDGs and began proactively implementing action and engagement. CN is committed to contributing to the achievement of the SDGs and has been working towards increasing and improving our contribution to this shared global vision.

The SDGs are significant and will take time to achieve. However, it is important to recognise the steps CN is taking to progress these goals. While CN recognises the importance of all 17 SDGs, the NES most closely aligns with nine of the 17 SDGs.



How SDG is addressed by NES

	<p>Goal 3. Ensure healthy lives and promote wellbeing for all at all ages</p> <p>A healthy environment is the foundation of good health and wellbeing. The NES supports the management and enhancement of natural and open spaces for recreation and amenity. It also aims to reduce pollution and emissions, and build a resilient city to reduce environmental health effects.</p>
	<p>Goal 6. Achieve availability and sustainable management of water and sanitation for all</p> <p>The NES supports our ongoing journey towards a water-sensitive city, with increased water retention, infiltration and recycling.</p>
	<p>Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all</p> <p>Clean energy is the key element to how we will create a net zero emissions city. The NES outlines how we will transition to green energy in CN operations and across the city.</p>
	<p>Goal 8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all</p> <p>The NES addresses the shift in our region towards clean energy and zero waste, including reduced use of fossil fuel energy and single-use plastics. The NES promotes collaboration with business, industry and our community.</p>
	<p>Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable</p> <p>The NES supports the development and retrofit of our city's infrastructure to be more energy, water and waste efficient. The NES will prepare us for the effects of climate change and support a climate-resilient city.</p>
	<p>Goal 13. Take urgent action to combat climate change and its impacts</p> <p>CN acknowledges the climate emergency and seeks to transition to a climate-resilient city.</p>
	<p>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development</p> <p>The NES addresses pollution that ends up in our waterways, including plastics, sediment and other pollutants. This will help protect the marine environment.</p>
	<p>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</p> <p>The NES promotes the increased use of nature-based solutions to protect and enhance the ecosystems and biodiversity within our city. The NES values regeneration and protection of our natural spaces, as well as the integration of our natural assets into accounting and reporting systems.</p>
	<p>Goal 17. Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development</p> <p>Sustainability and the regeneration of our environment requires collaborative partnerships with government, industry, business and the community.</p>

Challenges and opportunities

Our people are changing

Our population is growing and changing, putting increasing demand on environmental resources, assets and services. We are also changing the way we value and interact with our natural and open areas, with more people working from home and increasing their time spent in our urban green areas. A healthy environment supports a healthy community. Our physical and mental wellbeing depends on the quality of our air, water, food systems and interactions with nature.



Population The population of Newcastle is expected to grow from 169,317 in 2021¹ to 201,113 by 2041², causing increased demand for environmental resources.

1 profile.id 2023
2 forecast.id, 2023



Housing More than 15,000 new dwellings will be needed between 2021 and 2041³. The western corridor of the Newcastle LGA is expected to have up to 1,902 new dwellings accommodating over 3,000 new people over the next 20 years, largely on 'greenfield' (undeveloped, often bush) land⁴. Urban renewal corridors in inner city areas will see increased dwelling densities.

3 forecast.id
4 forecast.id

The decade of action

The United Nations recognises that we are putting extreme pressure on our global environment and are currently facing a triple planetary crises of climate change, nature loss and pollution. Our climate is changing, with 21.5 million people displaced by climate change related disasters each year⁵. Nature is declining at rates unprecedented in human history, with one million species of plants and animals currently facing extinction⁶. Each year more than seven million people die prematurely from pollution. Our unsustainable production and resource consumption is contributing to all three crises⁷.

5 UNFCC 2022
6 UN 2019, UNEP 2023
7 UNEP 2020

In response to these crises, the United Nations has declared this decade 'The Decade of Action' for achieving the Sustainable Development Goals⁸. We have to act now to ensure we leave a positive legacy for future generations⁹. Transformative change is required at a local to a global level to respond to the climate emergency and we need to reframe our relationship with nature to ensure a sustainable future¹⁰. There is an opportunity for CN to provide regional leadership in responding to the crises at the local government level.

8 UN 2023
9 UNEP 2020
10 UN 2019, Pereira, LM, Davies, KK, den Belder, E, et al. 2020



The climate crisis

The climate emergency has become the key social and economic challenge of the 21st century. We are beginning to see the impacts of a changing climate on our everyday lives. The effects of climate change will be experienced in Newcastle through the increasing frequency, severity and duration of weather events, impacting our community, as well as public and private assets, and natural areas. There are also indirect consequences of climate change to our health, wellbeing and economy.

Changing climate



Increasing temperatures: By 2030 maximum temperatures in the Hunter are projected to rise by 0.7°C and continue to rise by 2°C by 2070¹.

Extreme heat: The Hunter is projected to experience an average of 5 more days above 35°C per year by 2030 and 14 more days above 35°C per year by 2070².



Rainfall: By 2070 annual rainfall is projected to increase across most of the Hunter. Increases are seen across the region during summer and autumn. There are also increases across most of the region during spring³.

1 AdaptNSW
2 AdaptNSW
3 AdaptNSW



Sea levels: Sea level rise of between 0.21m and 1.06m is projected for the central NSW coast, which includes the Newcastle LGA, by 2100. A total of 50,774 properties could be exposed to tidal inundation across NSW if sea levels rise by 1m⁴.

At risk assets: By the year 2100, under a high emissions climate scenario, nearly 100,000 properties in the LGA (almost 20% of properties) will be at risk from the effects of climate change. Almost 9,000 properties in the LGA will be at 'high risk'⁵.



Severe fire weather: By 2039, severe fire weather is projected to increase across the Hunter in summer and spring⁶.

4 OEH 2018
5 Climate Council, 2022
6 AdaptNSW

Transforming our industries and economy

Pathways limiting global warming to 1.5°C with no or limited overshoot will require rapid, far-reaching and in some cases unprecedented transitions in energy, land, urban, building and transport infrastructure, and industrial systems⁷. The lion's share of emissions cuts needs to occur this decade if we are to avoid catastrophic climate change.

Newcastle, as the world's largest coal port, is uniquely positioned to harness the opportunities associated with a rapid transition away from fossil fuel-based industries and towards a low carbon economy, and become an international leader in renewable energy and associated industries. However, this transition will require significant capital investment and an adaptation of skills, infrastructure and services.



Job transition Approximately 1,200 people in Newcastle and 14,260 people in the region are employed directly in the mining sector⁸, and many thousands more are indirectly reliant on mining for income.

7 IPCC 2018
8 REMPLAN 2023



New clean energy jobs A national net zero emissions target can result in 195,000 jobs in the coming 50 years, especially in regional areas⁹.

9 Business Council of Australia, 2021

The nature crisis

As a growing metropolitan city, we are placing increasing pressure on our natural environment, including the clearing of vegetation, which leads to habitat degradation, fragmentation and loss. We have also introduced pest and weed species that compete with our native species, and our environment is now facing increasing threats from climate change.



Aging tree population: In Newcastle, our urban forest is aging, with 69% of our total street and park tree population projected to be lost by 2045.



Hard surfaces: 32% of the Newcastle LGA is hard (non-pervious) surface, including pavements, roads and roofs.



Threatened vegetation communities and species: Nine endangered ecological communities and 100 threatened plant and animal species have been recorded in the Newcastle LGA¹.

Harnessing nature-based solutions

Put simply, nature-based solutions are actions that address a societal challenge whilst providing a net gain for biodiversity. Nature-based solutions range from the conservation of existing core areas of vegetation to the creation of new habitat through the installation of green roofs and walls. We can use nature-based solutions to respond to the triple planetary crisis and protect and enhance nature. A key opportunity exists for CN to provide leadership in the demonstration and implementation of nature-based solutions.



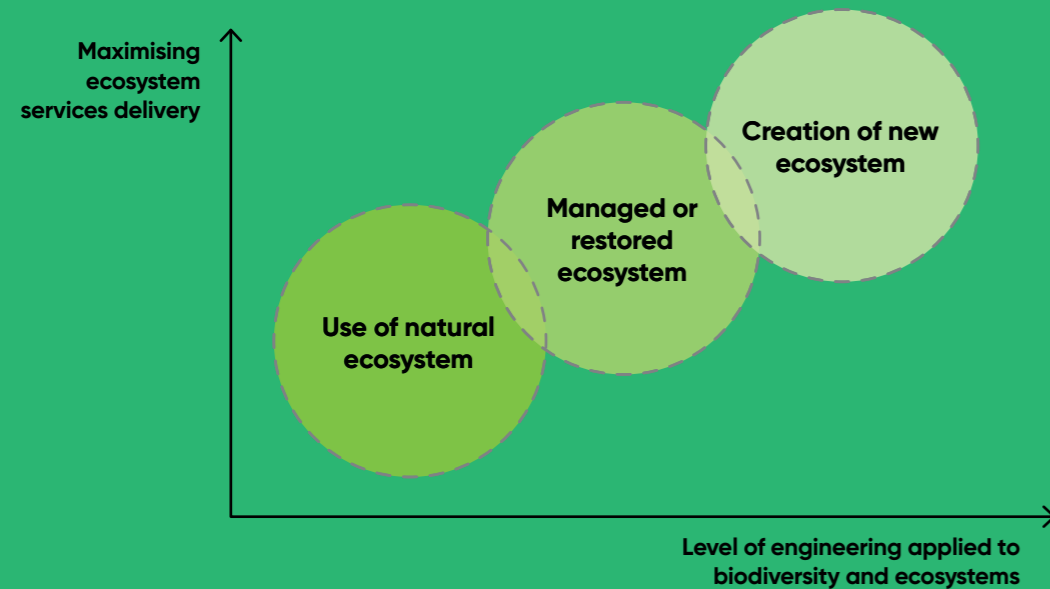
Creek renaturalisation: Over the last decade, CN has rehabilitated 3,162m of urban creek line within the Ironbark Creek catchment, using natural design principles.



Water Sensitive Urban Design (WSUD): CN currently has 105 WSUD devices, including infiltration pits, raingardens, sediment basins and infiltration tanks.

A typology of nature-based solutions, showing the three main categories of solutions based on natural, restored and new ecosystems, is presented below:

Typology of nature-based solutions²



¹ NSW Bionet

² IUCN 2016.

Unsustainable production and resource use

Ongoing unsustainable production and resource use has contributed to the triple planetary crisis³. Without a shift in the way we consume, use and manage resources, future generations will struggle to meet their needs. The unsustainable production and use of resources also leads to increased waste and pollution.



Waste: Summerhill Waste Management Centre collected 64,255 tonnes of 'waste' in 2022-2023.



Waste to resource: The domestic recycling diversion rate was 40% in 2022-2023.

Driving a circular economy

A circular economy responds to the challenge of meeting our current resource needs without compromising the needs of future generations. It is based on three principles: designing out waste and pollution; keeping products and materials in use (ideally at their highest value); and regenerating natural systems.



Summerhill Waste Management Centre: provides opportunities for developing advanced resource recovery processes, as well as a regional resource recovery hub for attracting circular economy innovation partners.



Photo by Olivia Groves - winner of NES Photo Competition Open Category

³ UNEP 2020

Our engagement

How we engaged

We've sought out our community's vision for the environment of Newcastle. The NES is built on feedback from our community, our local environmental experts and CN staff.

We received:

4,500

pieces of feedback

Approximately 4,500 pieces of feedback were gathered from community surveys and other engagement activities.

We heard from:

200

experts

Approximately 200 environmental practitioners from the private sector, neighbouring local councils, state government bodies, and non-government organisations, and educators and researchers, gave us their feedback.

150

staff

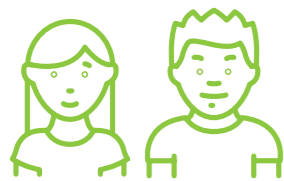
Approximately 150 staff and subject matter experts across CN gave us their feedback.

What we heard

The environment is highly valued and there is strong support for CN to grow and improve our environmental works and programs. By topic, highly rated priorities included:



Priorities differed by age:



Younger people

value taking strong action on climate change, to reach 100% renewable energy and net zero emissions.



Mid-aged people

value more trees, plants and green spaces, and using water wisely.



Older people

value protecting our natural areas and coastlines, using technology to reduce waste and preparing for future natural disasters from climate change.

Public exhibition of the draft NES

CN placed the draft NES on public exhibition from 27 July to 24 August 2023

Engagement activities

The community were able to participate in a number of ways:



Completing our online survey

132

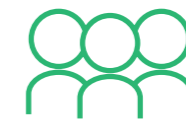
survey responses



Written submission via online form or email

7

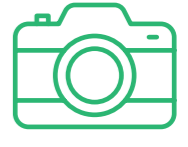
written submissions



Visiting us at one of our community pop-ups

200+

people attended



Entering our photo competition

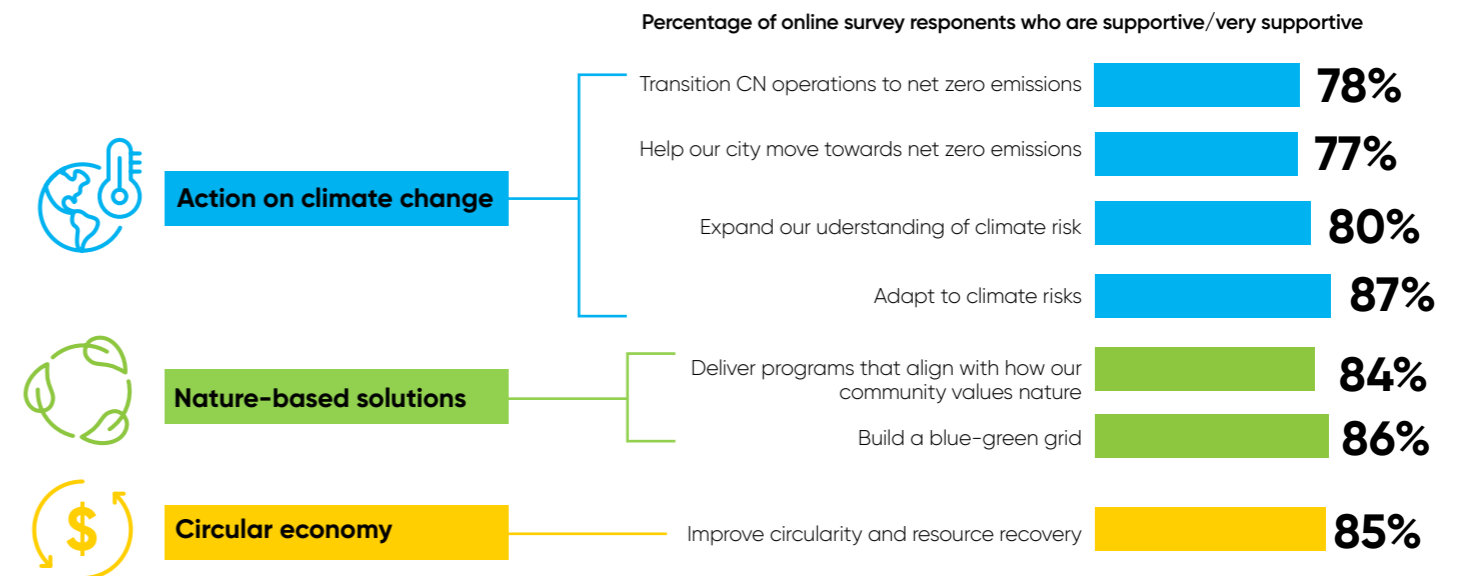
49

entries

Communication and promotion



Support for strategic priorities and deliverables



Sample size: N=132

Decades of progress

CN has been committed to protecting and improving our environment for decades. In 1997, we hosted the international conference 'Pathways to Sustainability' and *The Newcastle Declaration* was signed, which was a commitment from local governments around the world to sustainable development. The Declaration was presented to the United Nations at the Rio+5 Conference in New York and last year CN commemorated the 25th anniversary of the Declaration.

CN has celebrated many achievements over recent decades, which have supported the delivery of progressive environmental outcomes for our city.

Many of our environmental achievements and outcomes wouldn't have been possible without the support of our community.

CN has engaged and empowered tens of thousands of passionate school children, volunteers and residents who have helped to plant trees and other native plants; become citizen scientists and provided valuable data; assisted in restoring our natural areas; created backyard habitats; and transitioned to water and energy efficient and waste conscious households.



Tree planting day

Our environmental achievements



CN hosted the international conference 'Pathways to Sustainability' and the **Newcastle Declaration was signed** which was a commitment from local governments around the world to sustainable development. The Newcastle Declaration was presented to the United Nations at the Rio+5 Conference in New York.

CN developed the **ClimateCam delivery framework** which provided a whole-of-organisation approach to continuous improvement in sustainability, focussing on reducing carbon emissions and water usage. A ClimateCam suite of programs for households, schools and businesses was successfully delivered for over a decade.

A **Sustainable Urban Water Cycle Policy for Newcastle** was developed, with CN seen as a championing council in urban water cycle management and the implementation of Water-Sensitive Urban Design.

CN adopted the **Urban Forest Policy** to achieve an expanded and sustainable canopy cover throughout the LGA.

CN developed the first local government, purpose built **urban tree management system** in NSW, which was considered a critical milestone in public tree management.

Ironbark Creek catchment rehabilitation program begins – the staged program has rehabilitated creek lines from the headwaters down through the upper and lower reaches of Ironbark Creek. The program has renaturalised the creek and created resilience to a range of flow conditions, reduced erosion and sedimentation, improved local biodiversity corridors and habitat, fostered community stewardship and improved aesthetics. The program has won six state and national awards for ecological engineering and community engagement.

Three Waste Bin program introduced by CN which led to significant increases in domestic waste being diverted from landfill.

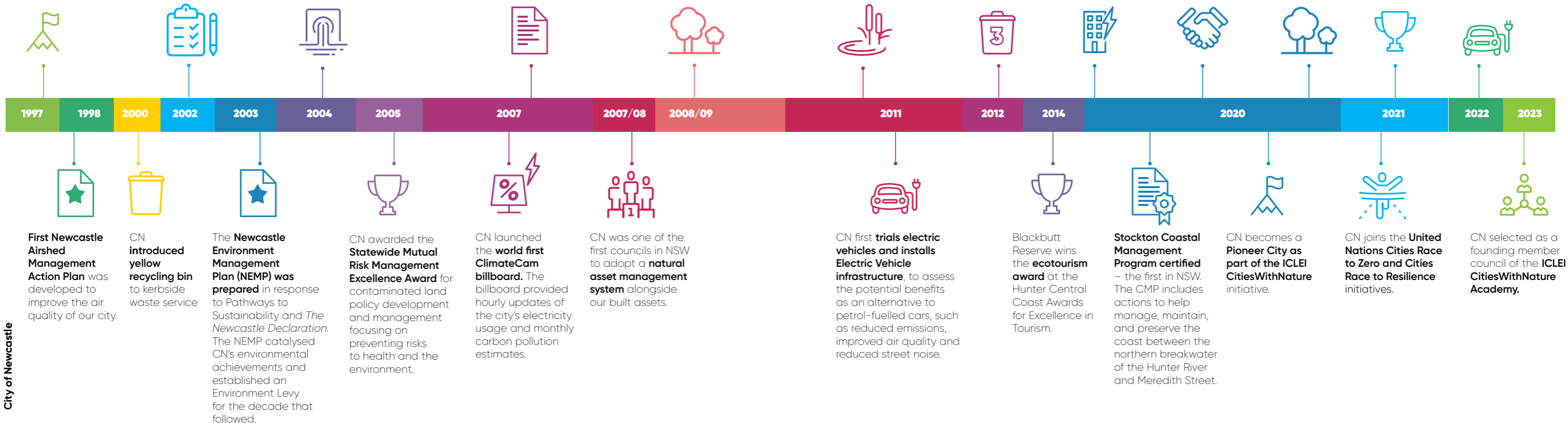
CN becomes first council in NSW, and one of the first across the country, to **move to 100% renewable electricity supply** for all CN operations.

CN's Lord Mayor chairs the **first Oceania Global Covenant of Mayors for Climate and Energy Committee**.

CN joined the global **Print Releaf program**, which offsets the pages printed by CN staff by planting trees and reforesting areas.

CN awarded the national **Banksia Sustainability Award** for participation in the Sustainable Development Goals City Challenge.

CN, in partnership with Ausgrid and EVX, delivered **Australia's first power pole mounted EV charger** at Dixon Park Beach.



Our environmental outcomes



We improved our understanding of shoreline recession and coastal inundation using the latest climate science with the completion of the **Stockton Bight Sand Movement Study in 2020** and **Newcastle Southern Beaches Coastal Processes Review Report in 2022**.

We prepared long-term strategies for the management of our open coast with the preparation of the **Newcastle Coastal Zone Management Plan in 2018** and the first certified **Coastal Management Program** in NSW for Stockton Beach in 2020.



Between 2012 and 2020, we worked with the Port of Newcastle to place **244,000m³ of sand dredged from Newcastle Harbour along Stockton Beach**.

We successfully advocated over a number of years for the NSW government to commit to the delivery of a **mass sand nourishment program at Stockton Beach**. This will be NSW's first mass nourishment campaign. Investigative works into multiple sand sources have commenced to ensure the nourishment program is flexible and resilient into the long term.

We have also delivered **significant interim coastal protection works at Stockton** to manage immediate risks ahead of mass sand nourishment.



In 2023, Newcastle airport (part owned by CN) was the **second airport in Australia to reach level 4 in the Airport Carbon Accreditation Program**.



Between 2019 and 2023, we supported citizen science by **installing five community CoastSnap monitoring points** to capture our changing coastline.



In 2023, we partnered with neighbouring councils to develop the **Hunter Estuary Coastal Management Program Scoping Study**.



Over the last 15 years, we expanded the **flash flood alert system** to cover the majority of the Newcastle LGA.



In 2020, we completed the **Tyrrell Street bridge upgrade and in 2019/20 we removed a building over Cottage Creek at Hunter Street bridge to improve flows during large floods**.



In 2017, we adopted the **Strategic Position for the Management of Low-Lying Areas of Newcastle** and have commenced **sea and groundwater level monitoring**.



In 2023, we prepared the **Throsby, Styx and Cottage Creek Flood Study** in line with the **Australian Rainfall and Runoff Guidelines 2019**.



Since 2012, we have installed **13 rooftop and carpark solar PV systems** totalling **685kW** and generating approximately one gigawatt hour of renewable energy each year. Four battery systems have also been installed between 2015 and 2023.



In 2019, we constructed a **5MW solar farm** on a closed landfill site at the Summerhill Waste Management Centre. We are one of only two local councils in Australia to build and operate a solar farm.



From 2013 to 2015, we delivered the Smart Buildings Smart Workforce program, where seven major CN sites were upgraded with air conditioning, lighting and thermal performance improvements. The program resulted in reduced electricity use of **1.45 GWh** and savings over \$245,000 each year.



We completed **energy efficiency upgrades** to the Newcastle Museum, which won a Cities Power Partnership national award in 2018.



Over the past decade we have collaborated with the Hunter Business Chamber and Hunter TAFE to deliver the award-winning Energy Hunter program to **over 350 businesses across the region**, providing real-time electricity monitoring, energy audits, workshops and assistance in developing energy efficiency projects. The program helped businesses **reduce electricity use by 5.6GWh and save over \$1.1M each year**.



Since 2018, we have replaced 5,000 lights on residential roads, **reducing our electricity consumption by 1.38 GWh each year**, which represents **10%** of our total electricity consumption.



Over the last fifteen years we have **rehabilitated 3,162m of creek lines within the Ironbark Creek catchment** using natural design principles, with over \$8 million invested to date.



Over the last decade we have regenerated **2,210 hectares** of our bushland.

In the last decade we have planted **over 8,520** new street and park trees across the Newcastle LGA and invest \$1.5 million annually in this program.



We have planted over 1.96 million native plants in the last decade as part of our bushland and coastal rehabilitation projects.



In 2013, we adopted an innovative **WSUD Above Wetland and Stream Erosion Index** in our Development Control Plan.



We have **18 active Landcare groups**, comprising over 150 volunteers, who dedicated over 4,500 hours to natural areas restoration activities in 2021/22.

Around **8,000 people** have participated in our summer coastal events program over the past 10 years.



We currently have over **1,300 Natural Connections** newsletter recipients.

Continuing on our sustainability pathway

Each year, CN delivers a large and diverse portfolio of works and programs to protect and enhance our local environment and to enhance the sustainability of our city. In conjunction with the new strategic priorities and deliverables contained in the NES, it is imperative that we continue to deliver and improve our current portfolio of works and programs – to capitalise on our outcomes to date; to continue our role as environmental leaders; and to achieve our vision of becoming a sustainable Newcastle.

CN continues its commitment to delivering:



Solar and battery installations on CN assets and facilities.

Energy and water efficiency improvements in CN assets and facilities.



Electric vehicle charging infrastructure.



A natural assets renewal program, to improve the health and condition of our bushland, waterways, coast and estuaries.

A street and park tree replacement program and other 'greening our city' initiatives, including street and community gardens.



Tree assessment, maintenance and life extension programs.

Blackbutt Reserve management.

The Blackbutt Reserve, Living Streets and Natural Connections environmental education programs.



A community urban forest program.



Coastal, flood risk and bushfire management programs.



Strengthened local land use planning, to reduce greenhouse gas emissions, transition to electric vehicles, facilitate active transport, protect and enhance biodiversity, expand the urban forest and drive a circular economy.



Landcare, Dunecare and Coastcare volunteer programs.



Strengthened Water-Sensitive Urban Design in the delivery of our capital works programs.



A management response to the 'Strategic position paper for the management of low-lying areas of Newcastle.'

Regulatory functions and programs to reduce air, noise, water and land pollution, including illegal dumping and encroachment.



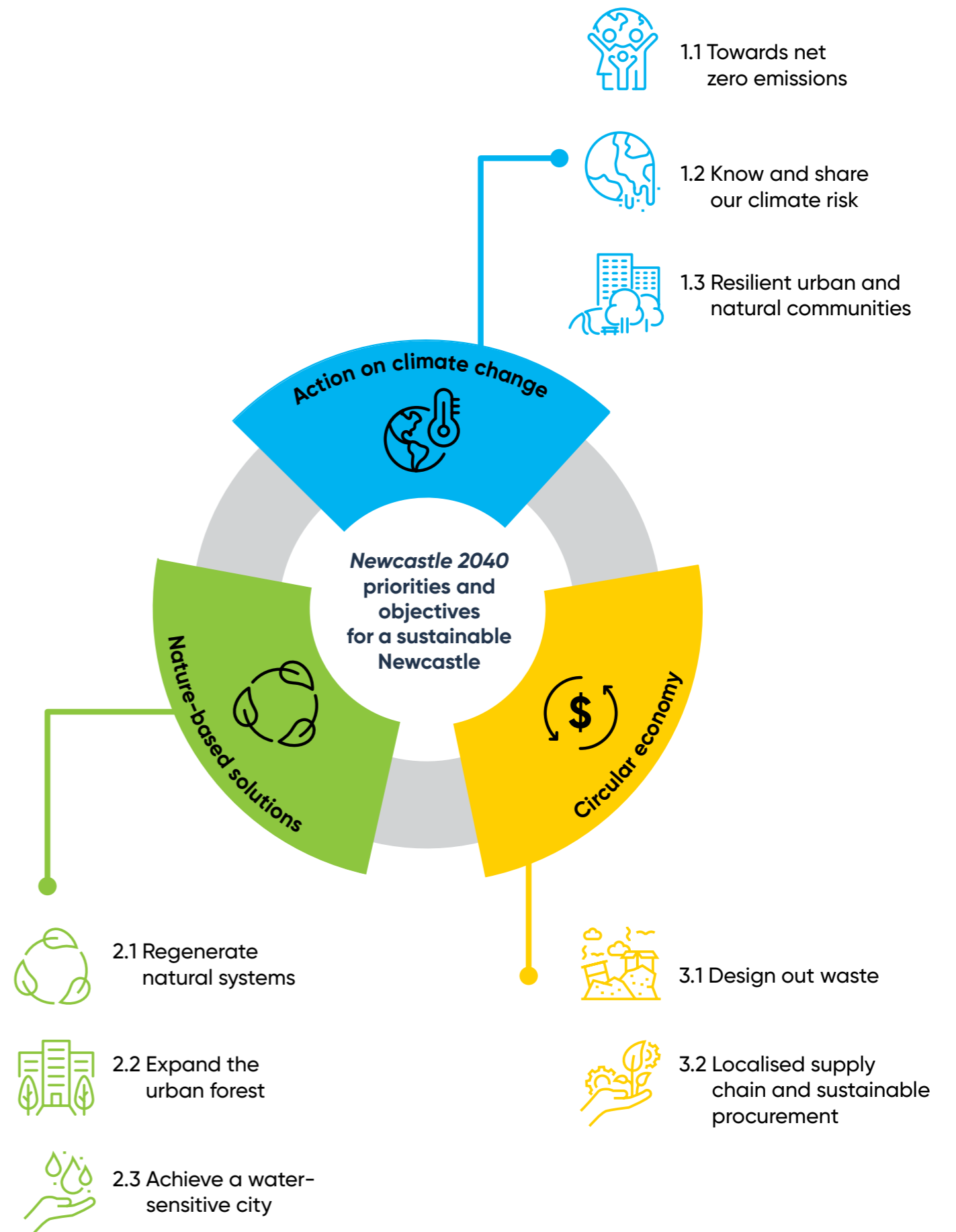
An invasive species program.

Our STRATEGY



Vision for a sustainable Newcastle

Our environment sustains our community, economy, health and wellbeing. It is at the heart of all that we do. Our city acts on climate change to achieve net zero emissions and build resilience in our community, infrastructure and natural areas. We protect, enhance and connect our green and blue networks, and we're transforming our city through circular economy solutions.



Newcastle ENVIRONMENT Strategy

The NES provides a roadmap for achieving the sustainable theme of *Newcastle 2040*, our Community Strategic Plan (CSP), over the next 10 years.

The NES aligns with the three priority areas identified in our CSP, namely action on climate change, nature-based solutions and circular economy, and the eight objectives that fall under these three priority areas.

The NES includes seven strategic priorities that demonstrate our key focus areas over the next 10 years. The NES is supported by a Four-year Delivery Plan that identifies 15 key deliverables for achieving our strategic priorities (Appendix 1).

The NES will be delivered in conjunction with CN's *Our Sustainable Waste Strategy*, *Newcastle Transport Strategy* and *On our Bikes Cycling Plan* and is currently supported by the *Newcastle Climate Action Plan 2021-2025*. Four additional action plans will support the delivery of the NES, outlined in the Four-year Delivery Plan.

A series of indicators and targets have been developed to measure the success of the NES (Appendix 2).



Photo by Hennessy Reynolds - winner of NES Photo Competition Primary Category



Our commitments

Some things are non-negotiable. They go above and beyond objectives, strategic priorities and deliverables and are central to everything we do. These are our commitments. They underpin the NES and inform the actions we take, the choices we make, the behaviours we demonstrate and the interactions we have. Our commitments will ensure that CN progresses as a local government environmental leader.

Through the delivery of the NES, we are committed to:



Aboriginal and Torres Strait Islander peoples and culture

CN recognises Aboriginal peoples as the first people of Australia and the Traditional Custodians of the land. Aboriginal people have lived here for over 60,000 years and are recognised as the oldest continuous culture in the world. We understand and appreciate that Aboriginal people have diverse, unique languages and spiritual beliefs and an enduring reciprocal relationship with the land and we seek lessons from this long period of stewardship.

CN commits to developing a genuine understanding of Aboriginal and Torres Strait Islander peoples' connection to Country and we embrace moving forward together and building a relationship based on mutual respect that acknowledges, values and celebrates Aboriginal and Torres Strait Islander peoples, their spirits, their spiritual beliefs and their culture.

CN commits to working in partnership with our traditional custodians to integrate and foster indigenous knowledge and stewardship and cultural sensitivity into the decisions we make, the land we care for and manage and the projects and programs we deliver and in supporting the retention and protection of cultural items and areas.



Working together

CN recognises that community engagement and action is critical to the successful delivery of the NES. CN commits to delivering programs, initiatives and incentives that build community knowledge and empower the community to act. CN commits to enabling local Landcare volunteers.



A regenerative future

CN recognises the intrinsic value of our natural environment, the benefits of nature to our society, and how nature is intertwined with our culture and wellbeing. CN commits to the global challenge of meeting the needs of all whilst simultaneously regenerating our planet. In applying a regenerative approach, CN commits to protecting biodiversity corridors and areas of high environmental value from development, rehabilitating and restoring our environment, and designing a city that can coevolve with nature.

CN commits to the principles of Ecologically Sustainable Development, including the precautionary principle, inter-generational equity, the conservation of biological diversity and ecological integrity, and improved valuation, pricing and incentive mechanisms. CN commits to the prevention of pollution.

CN commits to applying the Nature Futures Framework in planning for and delivering a positive future for our city. The framework recognises the diversity of values that people have for nature, including Nature for Nature, Nature as Culture and Nature for Society.



Adaptive management

CN commits to applying an adaptive management approach. We will use systematic decision-making processes and will continuously improve our management practices by learning from the outcomes of our practices. CN commits to complying with all relevant environmental legislation.



Social justice principles

CN commits to making fair and equitable decisions to support a cohesive society and ensure that vulnerable communities are not left behind.

The four principles of social justice are:

- **Equity**
Resources are allocated according to need with the aim of achieving more equal outcomes, particularly for those with greater needs or barriers to access.
- **Access**
People have fair access to services, resources and opportunities to improve their quality of life.
- **Participation**
People can fully participate in community life and genuinely influence decisions that affect their lives.
- **Rights**
Human rights are universal – everyone has the right to be treated with respect, equality and dignity. Human rights are the basic freedoms and protections that people are entitled to, including economic, social, cultural and political rights.

CN commits to the implementation of social justice principles with the aim of decreasing or eliminating inequity, promoting inclusiveness of diversity, and establishing environments that are supportive of all people.



Innovation

CN commits to seeking out best and next practice and embracing evidence-based, data-driven innovation. CN commits to embracing creativity and innovation in our organisation and in our community. CN commits to applying innovation to improve our community's experience and to enhance the sustainability, amenity and liveability of our city. CN commits to capitalising on our industrial history by using our skills, infrastructure and culture to build our future. CN will support skills development, training, research and engagement to drive and manage change.



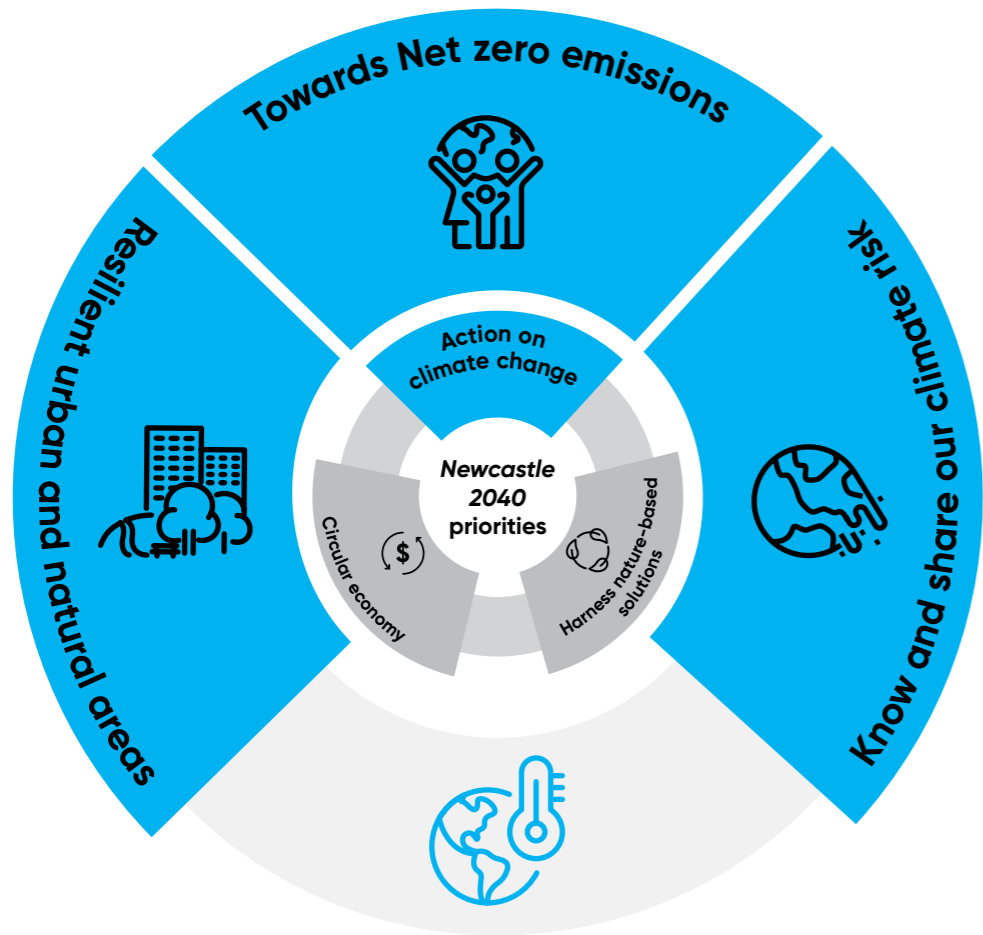
Sharing knowledge

CN commits to identifying targets for the successful implementation of the NES and regularly sharing our progress against these targets. CN commits to sharing and promoting our environmental outcomes and achievements.



Action on climate change

Newcastle 2040 priority 1



We respond to the climate emergency by committing to net zero emissions and preparing for risks from increasing temperatures, storms, coastal erosion, flooding and bushfires. Decisions we make build resilient communities, infrastructure and natural areas.

Why action on climate change?

Climate change is the long-term shift in temperature and weather patterns caused by increasing levels of greenhouse gases in our atmosphere.

Global surface temperature was 1.09°C higher over the last decade (2011-2020) than the 1850-1900 average, with larger increases over land (1.59°C)¹. Almost all of that increase can be attributed to humans. In 2019, atmospheric CO₂ concentrations were higher than at any time in at least 2 million years².

This has coincided with an increasing trend in the magnitude, intensity and frequency of climate and weather extremes, from heatwaves and droughts to floods and storms, in every region across the globe, with extensive economic, environmental and social costs for local communities³.

Climate projections indicate the world faces large scale collapse and loss of entire ecosystems; severe impacts to human health, from stronger heatwaves, lower air quality, and extreme loss of food and water; an increased extent of extreme weather and climate events, such as flooding, drought, severe storms and wildfire; increased damage to critical infrastructure; and severe economic losses due to aggregated and compounding impacts⁴.

The seriousness of the threats posed by climate change has led to the adoption of the Paris Agreement, which is a legally binding international treaty on climate change committing signatories to "holding the increase in the global average temperatures to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change".

The effects of climate change are already being experienced in Newcastle through more climate 'shocks' - single events like heatwaves, bushfires, floods and coastal erosion; as well as 'stresses' - incremental and increasing pressures on our assets, community and economy.

Action on climate change brings opportunity. We can transition our economy to a world-leading renewable energy supplier and make proactive decisions that prepare us for the changes ahead.

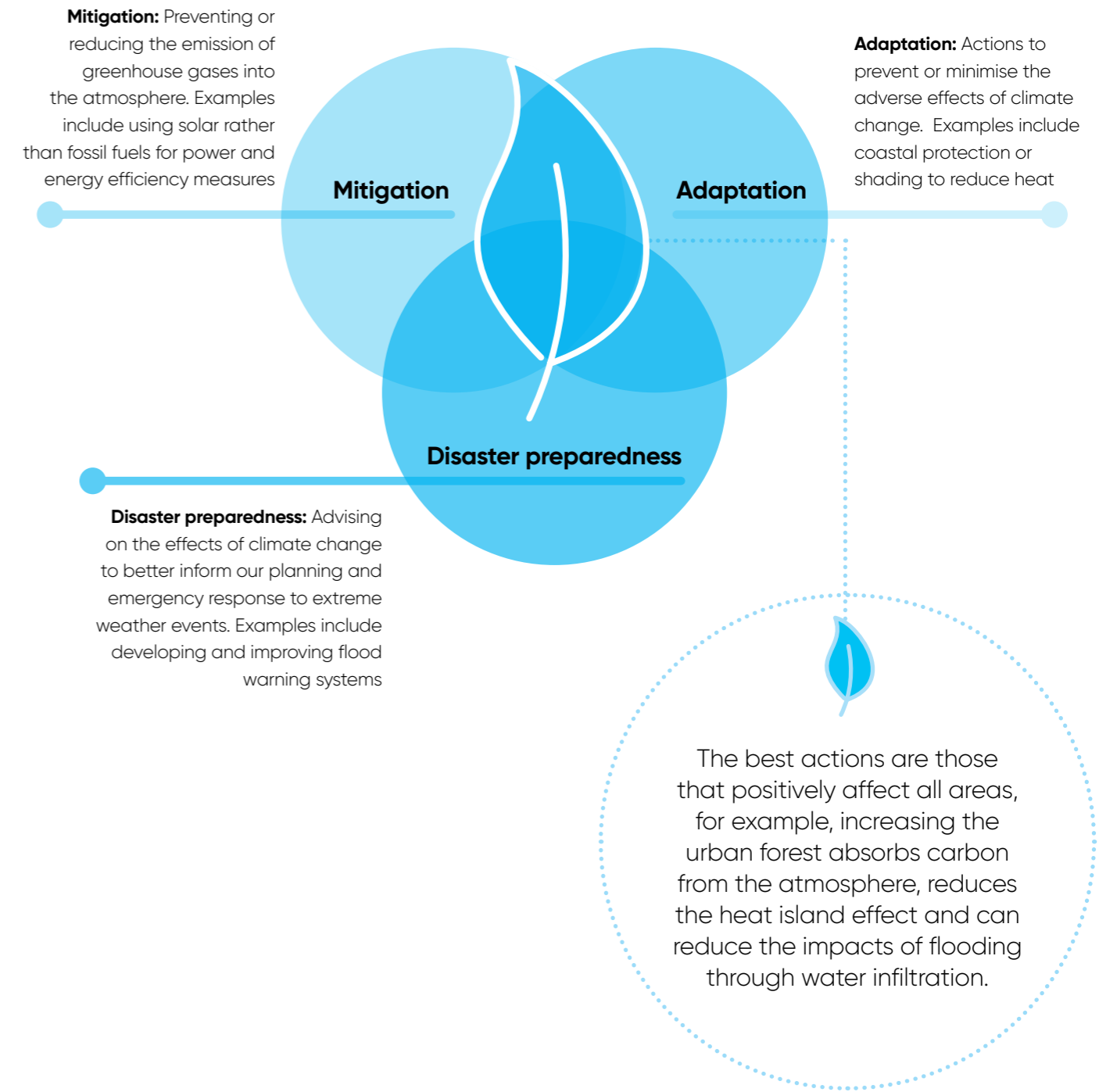
1 Climate Council (2021)
 2 Climate Council (2021)
 3 Climate Council (2021)
 4 IPCC (2018)



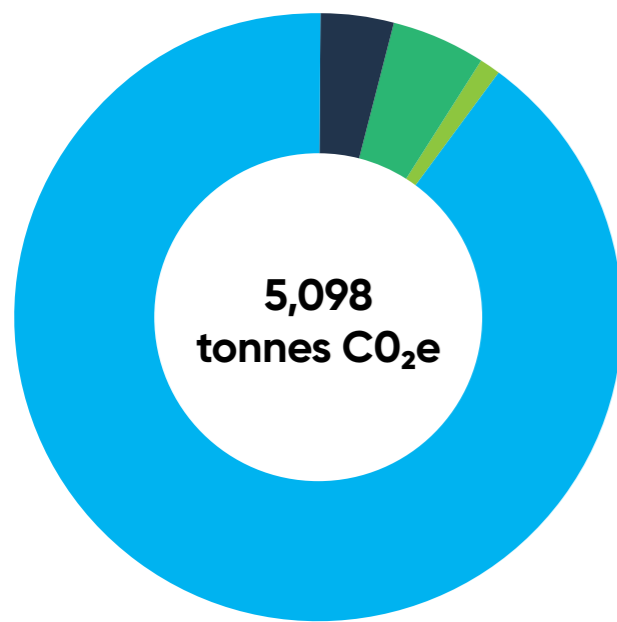
Effects of climate change on our city

	Shocks (short-term effects)	Stresses (longer-term effects)
Assets and services	Damage to property and infrastructure from extreme weather events.	Ongoing increases in temperature affecting assets and services. More frequent and higher inundation from tides.
Ecosystems	Ecosystems can die off during a fire or extreme heat event. Changes to the water cycle can also effect vegetation.	Loss of vegetation from heat, groundwater level, salinity or drought. Wildlife and vegetation often can't adapt, which increases invasive species.
Community	Risk to life from extreme weather events and short-term displacement.	Mental and physical health effects. Permanent displacement, decreased social cohesion, and increasing vector-borne disease. Effects are more often experienced by those more vulnerable.
Economy	Repair after an extreme weather event is expensive and it can cost more to 'build back better'.	The ongoing and increasing cost of maintenance to effected assets, increasing cost of insurance against disasters, and transitioning away from a coal economy.

Acting on climate change



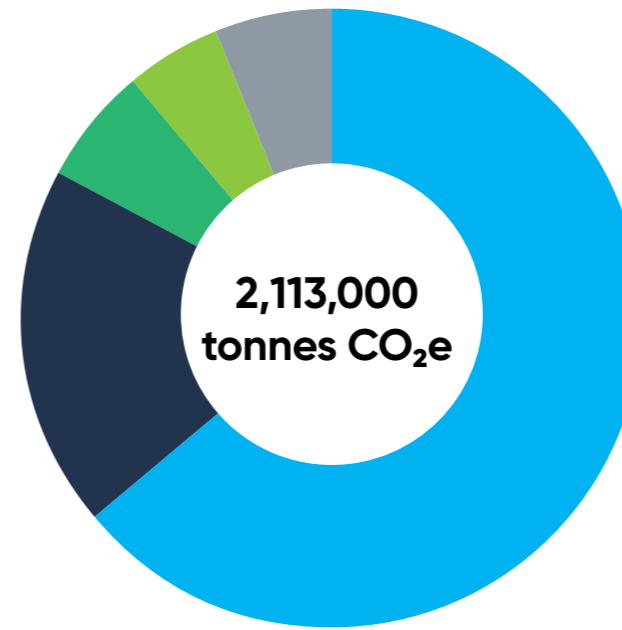
CN has championed renewable energy and action on climate change for over 20 years and has adopted the *Newcastle Climate Action Plan 2021-2025*, which commits CN to achieving net zero emissions from our operations by 2030 (from transport fuels, fossil-based gas and LPG, water and wastewater and office paper), and sets a goal for a net zero Newcastle by 2040.



City of Newcastle emissions profile 2020 (excluding landfill emissions at Summerhill Waste Management Centre)¹

- Transport fuels 90%
- Fossil-based gas and LPG 4%
- Water and wastewater 5%
- Office paper 1%

The strategic priorities and deliverables in the NES align with the *Newcastle Climate Action Plan 2021-25*. With electricity removed as CN's main emission source, through the supply of 100% renewable electricity, the use of fossil-based liquid fuels, such as diesel and unleaded petrol, in CN cars, trucks, plant and equipment now account for over 90% of CN's remaining operational emissions. Through the NES, we need to ensure that we maintain a 100% renewable electricity supply, through energy efficiency, upgrading existing legacy streetlights, increasing onsite solar PV and battery storage and a 100% renewable energy Power Purchase Agreement, whilst focusing on reducing our remaining emissions through the electrification of CN's fleet and operational vehicles, plant and equipment.



Emissions profile for Newcastle LGA 2020/21¹

- Electricity 64%
- Transport 19%
- Gas 6%
- Waste 5%
- Other (such as emissions from agriculture) 6%

CN supports the transformation of our region to a low carbon economy through renewable energy and will continue to advocate for new renewable energy industries. CN supports the Hunter-Central Coast Renewable Energy Zone and the declaration of an area in the Pacific Ocean off the Hunter, NSW as suitable for future offshore wind development, where environmental impacts can be appropriately managed. CN has an important role to play in demonstrating leadership, sharing knowledge, enabling action and encouraging innovation and new low carbon industries. City-wide electricity reduction through energy efficiency initiatives and switching to renewable energy in homes, businesses and industry can reduce emissions by two-thirds in the Newcastle LGA and lead to significant energy cost savings. Through grid decarbonisation, an accelerated uptake of solar and batteries and transitioning our buildings and transport to electric and low emissions alternatives, a net zero Newcastle is in reach.

¹ CN 2021

¹ Snapshot 2023



Action on climate change

Newcastle 2040 priority 1 – our community vision

Newcastle 2040 objectives

What we want to accomplish and the outcomes CN wants to achieve for a sustainable Newcastle.

1. Towards net zero emissions

Achieve net zero emissions by increasing energy and waste efficiency and reducing emissions from buildings, transport, infrastructure, and supply chains. Encourage clean technology and future energy initiatives and industries.

2. Know and share our climate risk

Undertake holistic, evidence-based assessment and monitoring of climate risks to enable best-practice risk and investment planning as we prepare for extreme weather events and support community and business to do likewise.

3. Resilient urban and natural areas

Create resilient communities, economies and natural areas that prepare for and adapt to climate risks. Prioritise social equity and ensure vulnerable communities are not left behind.

NES strategic priorities

Our key focus areas for achieving a sustainable Newcastle over the next 10 years.

Supported by Four-year Delivery Plan (Appendix 1)

Transition CN operations to net zero emissions through the electrification or use of low emissions alternatives for our vehicles, plant and equipment, and reducing operational emissions at Summerhill Waste Management Centre.

Support the transition of the Newcastle LGA to net zero emissions through an accelerated uptake of onsite solar and batteries; electric or zero emissions transport and buildings; community renewable energy and battery storage projects; and the transformation of business and industry.

Expand our understanding of local climate risks on our built and natural environment and our community and integrate evidence-based climate risk management into organisational decision making, investment planning and service delivery.

Apply adaptive management to urban planning and development, infrastructure design and natural area management in response to increased climate risks from flooding, coastal erosion and inundation, storms, heatwaves, heat stress, drought, and bush and grass fires.

NES indicators and targets

Measuring our success and tracking our progress towards a sustainable Newcastle.

Appendix 2

Net zero emissions from CN operations by 2030.

100% ↓ in city-wide GHG emissions from electricity by 2030.

↑ number of people using CN's flood alert system.

↑ number of community actions undertaken to benefit the environment as a result of participating in CN programs and initiatives.

Improvement in CN climate risk and resilience evaluation framework indicators.

EV car sales ↑ to 52% of total car sales by 2030-31.

↑ solar PV uptake in Newcastle LGA.

No one street and park tree species represent more than 10% of the tree population (biannual).

Strategic links

Our Sustainable Waste Strategy

Newcastle Transport Strategy

On Our Bikes Cycling Plan

Newcastle Climate Action Plan

Climate Risk and Resilience Action Plan (supports delivery of the NES)



Closure of Newcastle's BHP, 1997

We work together

Governments at all levels, business, industry and the community have important, complementary and differentiated roles in mitigating and adapting to the impacts of climate change. However, local governments are often at the front line in meeting the climate crisis, being both directly effected by the change and able to make long-term strategic decisions to lessen the effects for our community. We continue to partner with government, business, industry and our community to act on climate change.

We learn from past transitions

In 1997 Newcastle's then largest employer, the BHP steelworks, announced it was closing its doors, and 2,500 jobs were lost within two years. Through this transition, we grew and changed as a city. We will embrace these lessons to give us confidence to transition into our future of renewable energy.

Local stories

Solar panels above EV charging station at No. 2 Sportsground



CN E-Transit Hub at No. 2 Sportsground

CN provides a solar-powered EV charging hub and renewable electricity supply at No.2 Sportsground.

Known as an 'E-Transit Hub', the charging station was the first to roll out across the city and includes a 44kW solar car park cover, three EV chargers and more than 120kWh of battery storage, which is enough to power an average Newcastle home for nearly nine days.

The E-transit Hub will act as a testbed for similar facilities around the city.

Shade structures and increased vegetation and landscaping in Beresfield



Building cool spaces to beat the heat

The suburb of Beresfield experiences extreme heat. It is located in the west of the Newcastle LGA, away from the cooling influence of the coast, and experiences additional heat from the built environment (the urban heat island effect). This heat will intensify with climate change.

Beresfield Local Centre was one of the first centres to be renewed in 2018/19 as part of CN's local centres program. In collaboration with the University of Newcastle's School of Architecture and Built Environment, we incorporated elements to cool the site, including more trees, shrubs and other vegetation, as well as natural stone and light-reflective materials.

Measurements before and after the Beresfield local centre upgrade have found reduced temperatures up to 10°C in parts of the precinct.



Throsby cycleway with potential levee



A high tide in Throsby Creek

Sharing the risk of flood inundation and sea level rise

CN has undertaken detailed investigations to determine impacts from flood inundation, incorporating increases in sea levels and high tides, across low-lying land within the Newcastle LGA. Investigations included assessing a range of management options that could mitigate the predicted impacts of climate change. When comparing the costs and benefits of the options, feasible measures were identified to protect the low-lying suburbs from the predicted impacts of up to 0.8 metres of sea level rise. When sea level rise nears 0.8 metres, the existing measures will be reviewed and CN's strategic position will be updated.

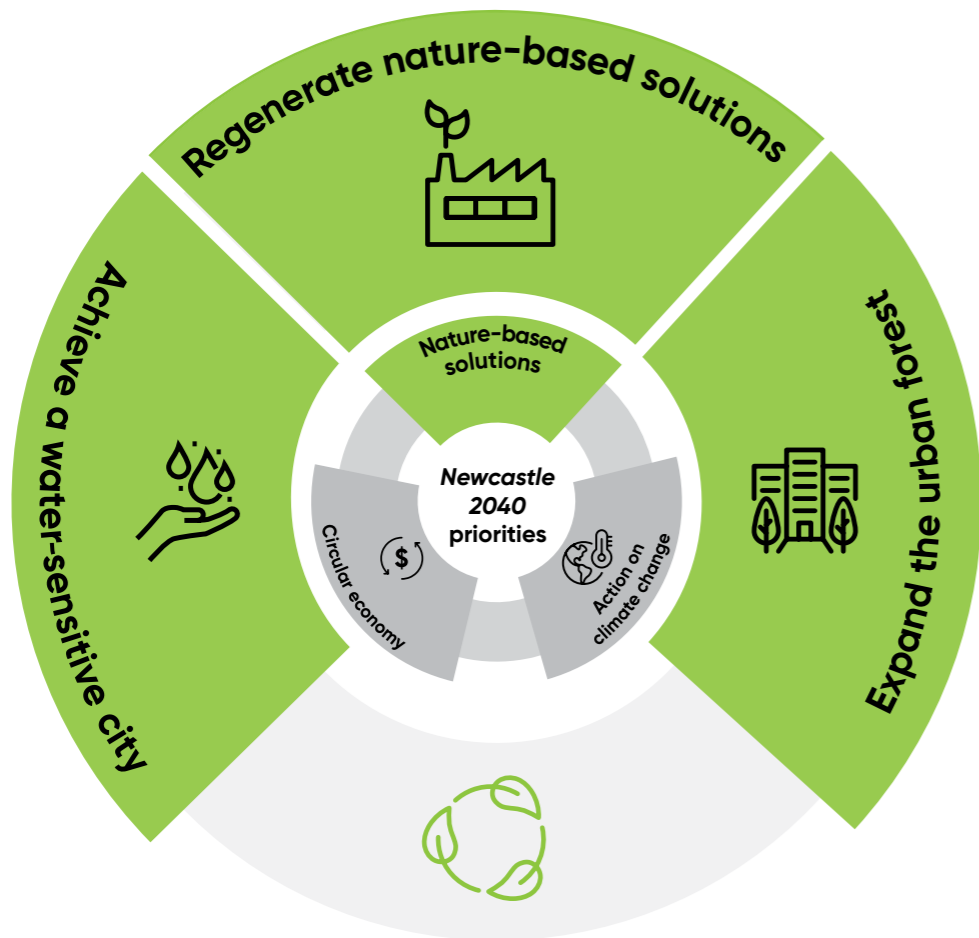
The Strategic Position for the Management of Low-Lying Areas of Newcastle outlines practical and timely measures that can be initiated to reduce the impacts of flooding from sea level rise. The timing for the implementation of measures is based on when we meet sea level benchmark 'triggers'.

The paper helps guide future decisions of CN, in particular those related to planning policy and the maintenance and renewal of public infrastructure, including funding.



Nature-based solutions

Newcastle 2040 priority 2



We manage and enhance our blue, green and natural spaces for biodiversity, recreational amenity and human wellbeing through education and engagement of our local community. We strengthen our blue and green grid through sustainable, integrated management that is adaptable to current and future risks. We regenerate our natural systems and work towards zero pollution through collaboration with our community and industry partners.

Why nature-based solutions?

Nature-based solutions play a pivotal role in addressing the following global challenges:

Climate change

Nature-based solutions can both mitigate our carbon emissions and improve our resilience to climate change. Nature-based solutions can protect existing vegetation to avoid the carbon emissions that result from clearing. Vegetation is enhanced by nature-based solutions to increase the capture and storage of carbon. Nature-based solutions can improve our resilience to climate change by providing increased shading and cooling, minimising erosion, and attenuating flooding.

Nature loss

Our city is not immune to the nature crisis. Newcastle has suffered from the clearing of vegetation and the introduction of invasive species and is now facing increasing threats from climate change. However, we still have many natural values worth protecting, including a diverse and rich array of vegetation communities and threatened species, like the Squirrel Glider and Green and Golden Bell Frog. Nature-based solutions can protect, rehabilitate, restore and connect our natural areas.

Pollution

Newcastle has a legacy of soil contamination from our industrial past and continues to be effected by air and water pollution, as well as illegal dumping and litter. Nature-based solutions, like phytoremediation, being the use of plants and associated soil microbes to reduce the concentrations or toxic effects of contaminants in the environment, can be used to treat historic contamination. Nature-based solutions can also improve air and water quality by absorbing and filtering pollutants.



Photo by Tasman Mitchell - winner of NES Photo Competition Secondary Category



Harnessing nature-based solutions

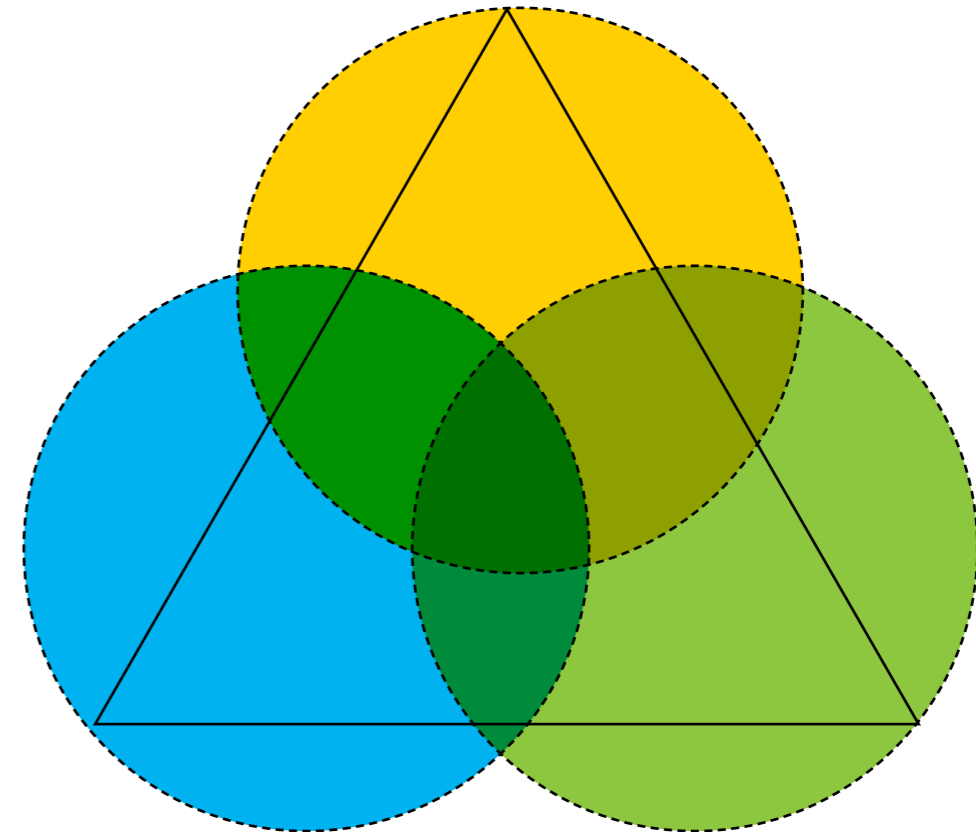
We are in the United Nations Decade of Action, where globally we can work together to transform our world. As our city continues to grow and become more urbanised, we want to act local, but think global, by doing our part in responding to the nature crisis with a suite of nature-based solutions. We will lead transformative change by utilising the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Nature Futures Framework (NFF) to build a positive future with nature and guide our works over the coming decade.

We recognise that people value nature for different reasons and will use the NFF to consider all values in the planning and delivery of works and programs. Valuing nature more and intertwining it into our city, and mainstreaming the use of nature-based solutions means we will do our part in addressing the triple planetary crises of climate change, nature loss and pollution.

Nature Futures Framework¹

Nature for nature

- Intrinsic value of nature.
- Space allocated for nature.



Nature as culture

- Living in harmony.
- People one with nature.

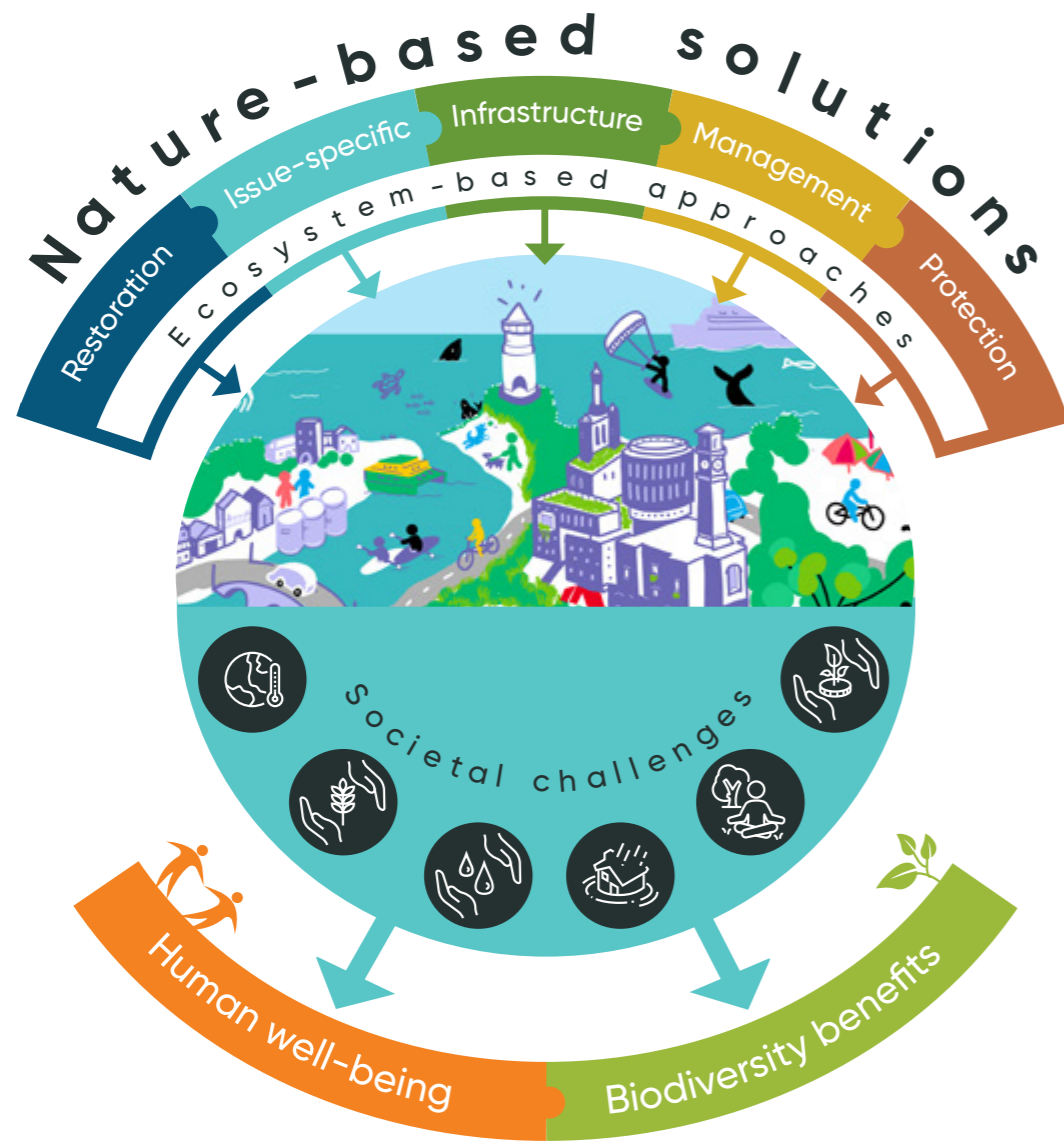
Nature for society

- Nature's benefits to people.
- Ecosystem services.

¹ CSIRO 2022

Nature-based solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature¹. To be classed as a nature-based solution, the action must address one or more societal challenges (for example, climate change), result in a net gain for biodiversity, and benefit human well-being². We can use nature-based solutions to bring nature, and the multiple benefits it can deliver, into our city³.

We will protect and restore our urban forest to reduce our emissions, minimise urban heat and enhance local biodiversity. We will broaden our implementation of Water-Sensitive Urban Design to improve our waterways, reduce pollution and contribute to a water-sensitive city. We will protect and expand our blue and green grid to improve biodiversity connections and enhance liveability. We will be regional leaders in demonstrating and implementing nature-based solutions.








Figures sourced from ADAPT: Nature-based solutions in the Western Balkans

1 IUCN 2020
2 IUCN 2020
3 UNEP 2021

Benefits and examples of nature-based solutions

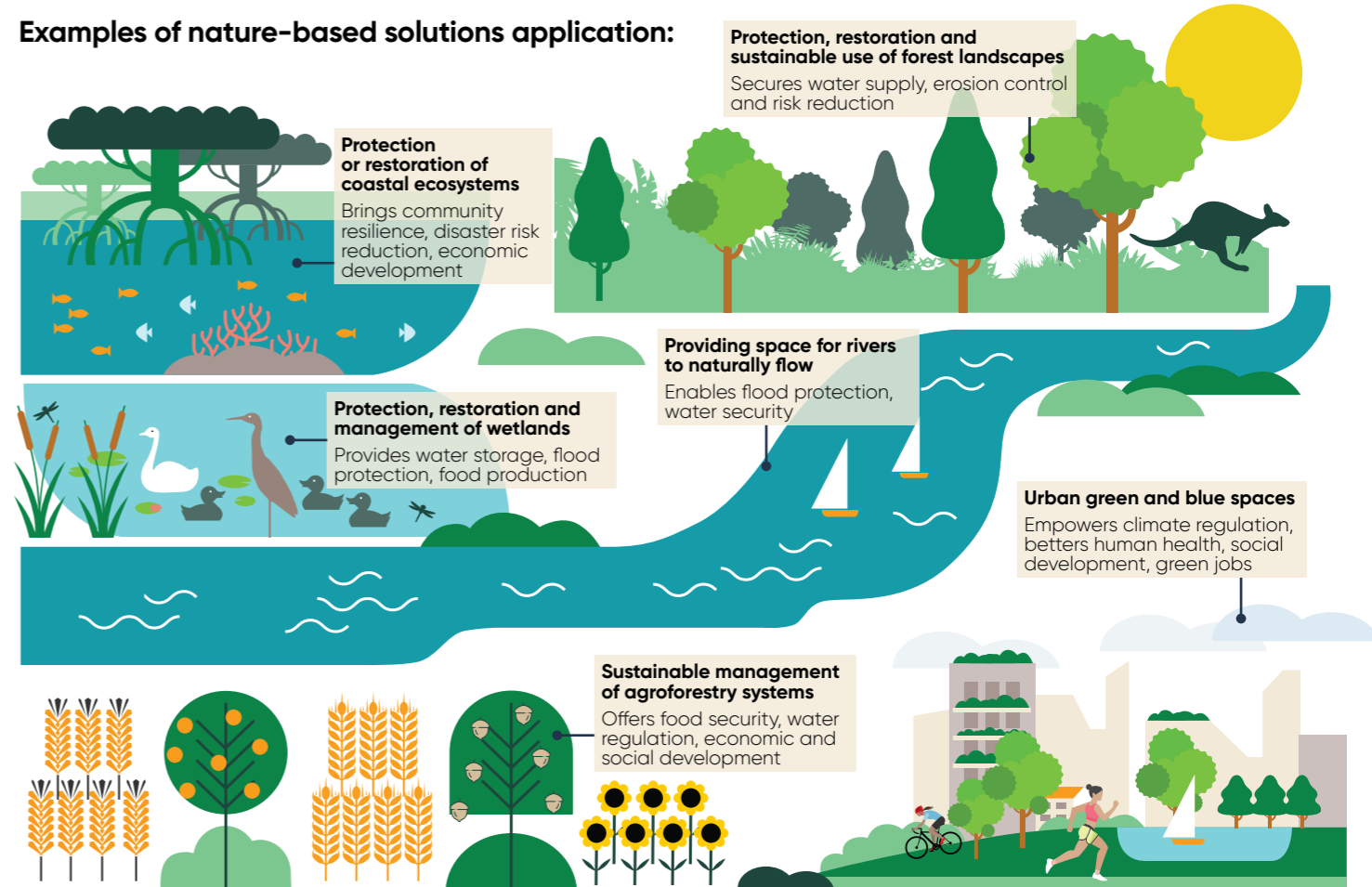
Nature-based solutions have prime potential to help address global challenges such as:

 climate change	 Economic and social development	 human health
 food and water security	 disaster risk reduction	 ecosystem degradation
		 biodiversity loss

Nature-based solutions can provide long-term environmental, societal and economic benefits:

 adaptation to climate change	 green jobs	 health benefits	 community resilience
 healthy and accessible food	 clean air and water	 disaster risk reduction	 ecosystem integrity
			 biodiversity net gain

Examples of nature-based solutions application:



Adaptation from IUCN 2023



What is a water-sensitive city?

A water-sensitive city can be described as a city that is resilient, liveable, productive and sustainable.

A water-sensitive city:

- provides the water security essential for economic prosperity and climate resilience, through the efficient use of a diverse range of available water resources;
- enhances and protects the health of waterways, wetlands and the coast;
- mitigates flood risk and damage; and
- creates public spaces that enhance liveability by collecting, cleaning, and recycling water.

CN and Hunter Water both play a role in managing the water resources within our city. Hunter Water provides drinking and wastewater services, as well as maintaining approximately 80km of concrete lined creeks within the Newcastle LGA. CN maintains and manages 80km of ephemeral streams and creeks in the upper reaches of our catchments, as well as approximately 500km of minor stormwater pit and pipe networks conveying stormwater runoff to Hunter Water concrete lined creeks. CN is responsible for flood planning and management of public spaces within the Newcastle LGA.



What is an urban forest?

Our urban forest is made up of all the trees, shrubs and vegetation in our city, including in our parks, bushland reserves, school yards, businesses, public streets, and backyards. Our urban forest also includes the soil and water that supports our vegetation. Our urban forest provides us with many benefits, including cooling and shading, cleaning our air and water, providing habitat for wildlife, absorbing carbon, and beautifying our city.



What is the blue green grid?

The blue green grid is the creation of a network of 'blue' and 'green' links that connects our town centres, schools, public transport hubs and residential areas and supports improved accessibility, recreation, biodiversity and liveability. The grid also protects and connects existing bushland areas and naturalises and improves our waterway health.

Blue features

Canals, creeks, rivers, wetlands, rain gardens, bioswales, stormwater channeks, harbour foreshores.

Green features

Parks, trees, playgrounds, playing fields and golf courses, bushland, private gardens, street verges, green walls, green roofs.



Nature-based solutions

Newcastle 2040 priority 2 - our community vision

Newcastle 2040 objectives

What we want to accomplish and the outcomes CN wants to achieve for a sustainable Newcastle.

1. Regenerate natural systems

Strengthen our natural environments, including our waterways and beaches, to support healthy, biodiverse systems; minimise pollution; and maintain recreational amenity as well as ecological and community value.

2. Expand the urban forest

Manage and care for Newcastle's urban forest and maximise urban greening, resulting in a healthy, green and biodiverse city that provides economic, ecological and social benefits.

3. Achieve a water-sensitive city

Integrate the water cycle in planning, design and construction to create liveable urban spaces. Capture water at the source, mitigate flood impacts through design, and create public spaces that collect, clean and recycle water.

NES strategic priorities

Our key focus areas for achieving a sustainable Newcastle over the next 10 years

Supported by Four-year Delivery Plan (Appendix 1)

Apply the Intergovernmental Science- Policy Platform on Biodiversity and Ecosystem Services (IPBES) Nature Futures Framework (Nature for Nature, Nature for Society and Nature for Culture) to guide projects and initiatives that respond to the climate change, nature loss and pollution crises.

Build a network of high quality blue and green spaces that connects town centres, public transport hubs, schools and residential areas (a blue green grid) for enhanced liveability and biodiversity outcomes.

NES indicators and targets

Measuring our success and tracking our progress towards a sustainable Newcastle.

Appendix 2

20% of CN bushland areas in excellent condition by 2033.

Two strategic biodiversity corridor gaps protected or enhanced annually at a landscape scale.

Annual length of watercourses rehabilitated.

↑ satisfaction with our blue, green and wild spaces.

40% tree canopy cover in the Newcastle LGA by 2045.

30% road reserve, and 30% open space, canopy cover by 2045.

↓ three-year average trend in potable water use in CN operations.

↑ overall Water-Sensitive Cities Index Score.

↑ number of community actions undertaken to benefit the environment as a result of participating in CN programs and initiatives.

Strategic links

Urban Forest Action Plan (supports delivery of the NES)

Water-Sensitive City Action Plan (supports delivery of the NES)

Blue Green Grid Action Plan (supports delivery of the NES)

Local stories



Restoring Ironbark Creek

Ironbark Creek catchment rehabilitation

Ironbark Creek forms part of the largest catchment in our city, covering over 12,000 hectares. The catchment is home to internationally important (Ramsar) wetlands at the Hunter Wetlands Centre and provides an important fish and prawn nursery at Hexham Swamp. The Creek also provides a biodiversity corridor between the Ramsar wetlands at the Hunter Wetlands Centre and the Ramsar wetlands at Kooragang.

CN is committed to improving the health of Ironbark Creek as it supports our important wetlands and fish nurseries and provides a significant blue green corridor for our city. In 2011, CN started the award-winning Ironbark Creek Catchment Rehabilitation Project, and during this time we have rehabilitated over 3,100m of creek lines from Rankin Park to the Wallsend floodplain. The project is ongoing and is currently valued at over \$8.3 million.

The project uses nature-based solutions to re-naturalise creeks in the catchment. Natural channel design principles are used to mimic a natural creek, including the installation of rock to create pool and riffle sequences, and revegetation of riparian areas with native species. The works reduce erosion, enhance biodiversity, and improve amenity and flood predictability.

Re-naturalising creeks in the catchment improves the quality and quantity of water that flows downstream into our wetlands and fish nurseries. The project is supported by our dedicated 'Natural Connections' community education program, which promotes community stewardship of local creeks.

Local stories



Improved drainage, vegetation and guttering in Carrington

Water-sensitive urban design in Carrington

The suburb of Carrington is low-lying and at risk of flooding. During its local centre upgrade, CN installed a range of innovative measures, including oversized raingardens with curved low-flow channels to reduce sediment movement to stormwater pits; permeable footpaths and gutters; infiltration pits; and elevated street tree structures to create large soil volumes for tree roots above the water table.

The reduction and disconnection of impervious areas is an example of how water-sensitive city design can improve water quality by returning the system to a more natural, pre-developed environment, as well as improve safety and amenity, and decrease urban heat impacts.



CN tree planting site in Islington (above) and Jesmond (right)

Expanding our urban forest

CN works to expand our urban forest by planting around 1,200 street and park trees annually through our Living Streets program. We prioritise areas most in need, in conjunction with road and footpath repairs and construction.

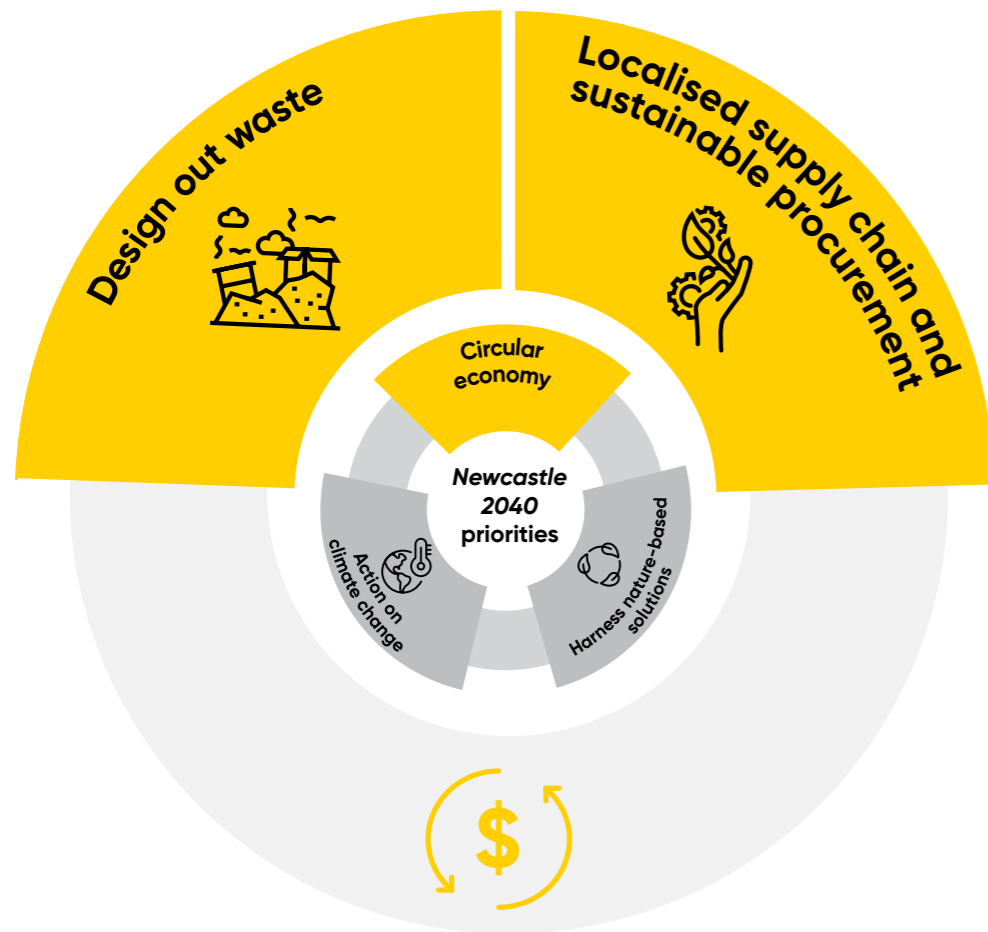
CN also partners with other agencies, the private sector and the community to increase our plantings. For example, CN supported a program by The Greater Bank to plant 20,000 seedlings at five sites across Newcastle in 2021.





Circular economy

Newcastle 2040 priority 3



Through our transition to a circular economy, we design out waste, creating new opportunities and technologies in our local economy, promoting renewable products and sustainable infrastructure, and rethinking our use of resources as a circular flow.

If we work smart,
it is possible to do
more with less.

Why a circular economy?

Our waste problem

Australia's per capita use of natural resources is among the highest rate in the world, with about 35 tonnes extracted on average for each resident every year (three times higher than the global average). Once materials have been used, they often end up being disposed of, and in 2018 the Newcastle LGA exported an estimated 4,500 tonnes of waste overseas. However, countries are changing their policies on the acceptance of waste, and we need to consider how we better manage our own.

In terms of production, Australia's shift away from local manufacturing and a growth in international goods transportation has resulted in more international, complex and fragile supply chains. The COVID-19 pandemic showed how a reliance on international supply chains can lead to production disruptions and shortages. Patterns of long-distance shipping of products have also been premised on carbon-fuel transport, which is environmentally unsustainable and exposed to energy market volatility.

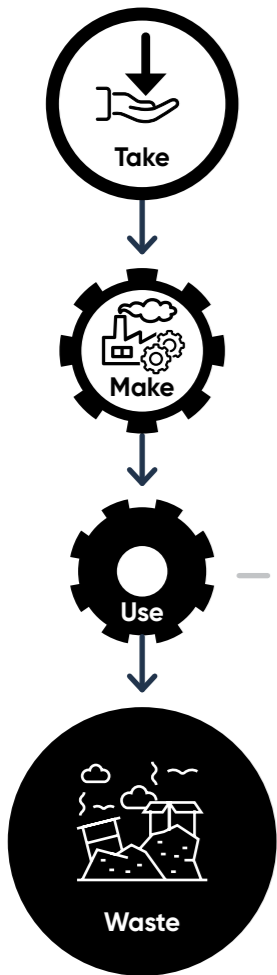


CN employees at Summerhill Waste Management Centre

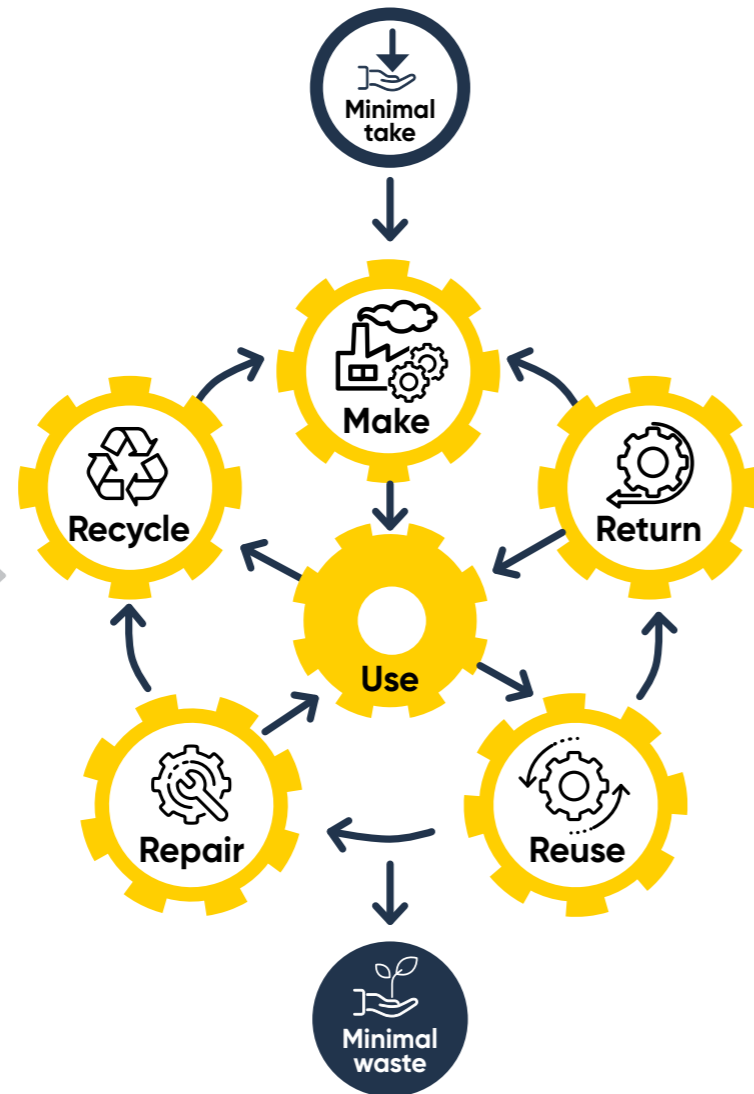
Driving a circular economy

The circular economy is an economic and social framework that strives to design out waste and pollution, keep materials in circulation at their highest value, and minimise the extraction of non-renewable resources. A circular economy approach will provide Newcastle with new employment and economic opportunities, while also protecting biodiversity, reducing non-renewable resource demand and addressing climate change. A circular economy approach also provides opportunities for CN to reduce its scope 3 emissions.

Linear economy



Circular economy



Adopting a circular economy framework provides the potential for significant jobs creation and economic growth in Newcastle. CN can leverage traditional areas of industry expertise and competitive advantages, such as well-developed local technology and manufacturing and export infrastructure. We can harness first-mover advantages by establishing circular industries and enterprises early, by catalysing industry clustering (for example, related to renewable energy industrial hubs) and attracting government funding.

CN manages the Summerhill Waste Management Centre (SWMC), one of NSW's largest resource recovery facilities. This provides the city with tangible influence over economy-wide waste management practices and affords new commercial opportunities. There is the opportunity to establish circular economy precincts, with co-location sites providing economies of scale and tangible supply chain benefits. More broadly, technological advancements like renewable energy and new methods for repurposing resources are transforming what is meant by economic development. It is now technically feasible to decouple economic growth and prosperity from increased resource use.



Circular economy

Newcastle 2040 priority 3 - our community vision

Newcastle 2040 objectives

What we want to accomplish and the outcomes CN wants to achieve for a sustainable Newcastle.

1. Design out waste

Create sustainable material cycles through the city's economy. Establish resource recovery industries and circular economy precincts. Increase recycling and productive reuse of organics.

2. Localised supply chain and sustainable procurement

Foster resilience and sustainability through procurement, resource-sharing and construction activities that preference local suppliers and supply chains.

NES strategic priorities

Our key focus area for achieving a sustainable Newcastle over the next 10 years.

Supported by Four-year Delivery Plan (Appendix 1)

Improve circularity and resource recovery in CN's operations and supply chain, and support and advocate for industry, business and the community to transition to a circular economy.

NES indicators and targets

Measuring our success and tracking our progress towards a sustainable Newcastle.

Appendix 2

Improvement in CN sustainable procurement evaluation framework indicators.

↑ number of community actions undertaken to benefit the environment as a result of participating in CN programs and initiatives.

Strategic links

Our Sustainable Waste Strategy
Newcastle Climate Action Plan

Local stories



Repair cafes at CN libraries

CN Libraries

CN's libraries are champions of a circular economy, with a long tradition of offering items like books, seeds or toys to borrow, as well as access to resources like computers, printers and a media room. Our libraries continue to drive a circular economy by hosting repair cafes, that teach people new skills to fix broken or damaged items instead of throwing them away.

Repair cafes held at Lambton Library have supported the repair of clothing, small hand tools, bikes, furniture and toys. There have also been swap markets to freely exchange quality goods within the community.



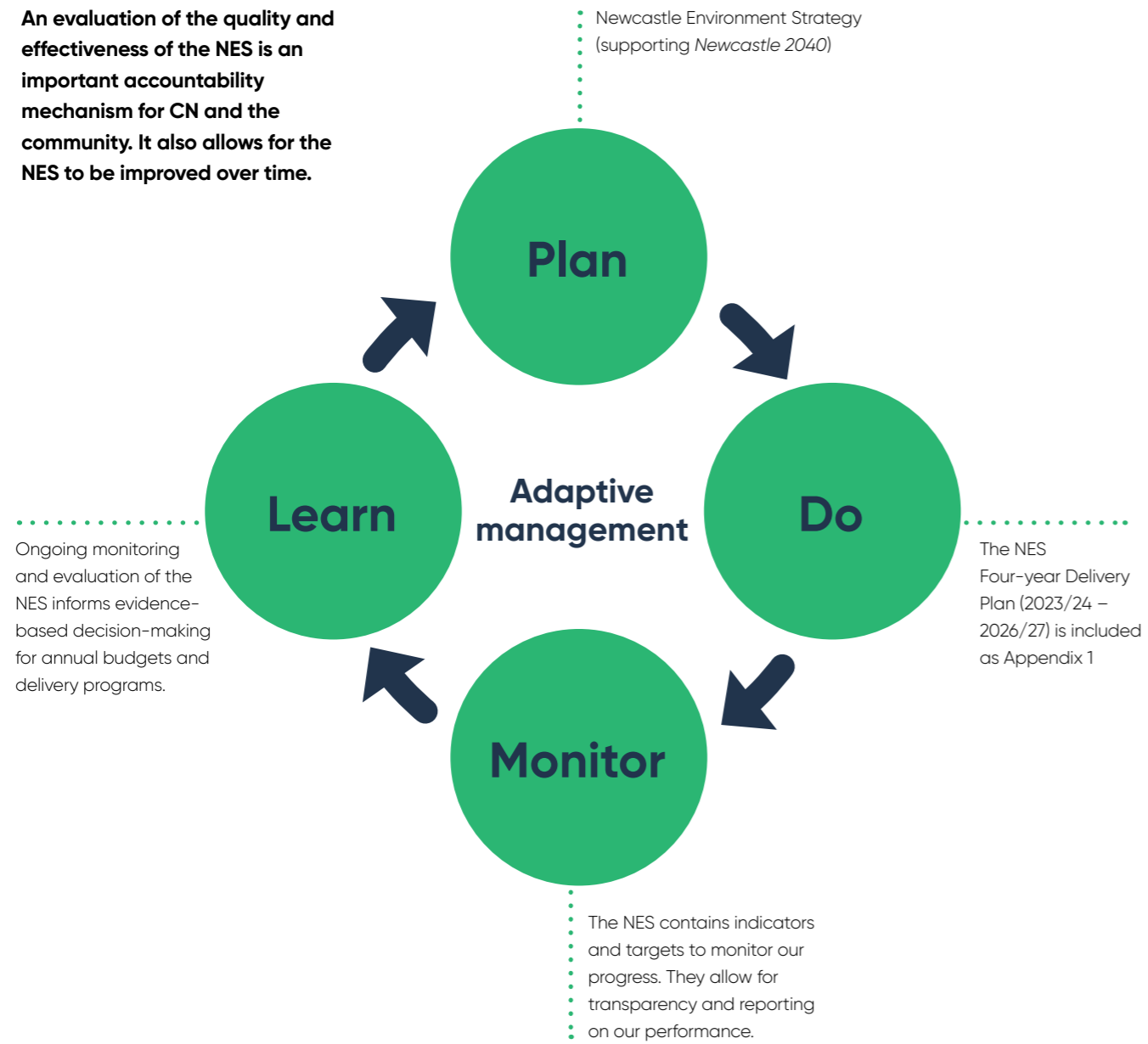
Fencing along the Newcastle Bathers way coastal walk, made from recycled wood and plastic materials

Sustainable fencing across CN

Much of the fences that border our coasts and sports fields are made from a sustainable composite that comes from household, commercial or industrial waste. Integrating recycled and reclaimed plastics and wood creates fences that are strong and resistant to pests and corrosion, while being good for the environment by turning waste into a resource.

Monitoring, reporting and improving

An evaluation of the quality and effectiveness of the NES is an important accountability mechanism for CN and the community. It also allows for the NES to be improved over time.



Appendices

Appendix 1 – Four-year Delivery Plan

Appendix 2 – NES indicators and targets

Appendix 1

Four-year Delivery Plan

Our role



Deliver (Control)

CN delivers a wide range of programs and services including community education, asset management, strategic and statutory planning or on ground works.



Partner (Influence)

There are areas in which CN has partial or shared responsibility or influence. CN builds strategic partnerships with federal and state government agencies, the private sector, and a range of other stakeholders whose work will contribute to delivering our long-term priorities.



Advocate (Concern)

A wide range of issues important to the community sit outside CN's control. CN gives a voice to the needs and aspirations of the community by advocating for changes in policy and action at relevant levels of government and industry.



Action on climate change



Newcastle 2040 priority	Newcastle 2040 objective	NES strategic priority	NES key deliverable (4-year delivery plan)	Our role	23/24	24/25	25/26	26/27
2.1 Action on Climate Change We respond to the climate emergency by committing to net zero emissions and preparing for risks from increasing temperatures, storms, coastal erosion, flooding and bushfires. Decisions we make build resilient communities, infrastructure and natural areas.	1.1 Towards Net Zero Emissions Achieve net zero emissions by increasing energy and waste efficiency and reducing emissions from buildings, transport, infrastructure and supply chains. Encourage clean technology and future energy initiatives and industries.	Transition CN operations to net zero emissions through the electrification or use of low emissions alternatives for our vehicles, plant and equipment, and reducing operational emissions at Summerhill Waste Management Centre.	Implement an electrification and low emissions alternative roll-out of CN's vehicles, plant and equipment through the development and delivery of a Vehicle, Plant and Equipment Transition Plan.	Deliver	Develop	Deliver	Deliver	Deliver
		Support the transition of the Newcastle LGA to net zero emissions through an accelerated uptake of onsite solar and batteries; electric or zero emissions transport and buildings; community renewable energy and battery storage projects; and the transformation of business and industry.	Provide suitable charging solutions for electric vehicle owners and encourage and incentivise the uptake of electric vehicles and low emissions transport through the delivery of a city-wide Electric Vehicle and Low Emissions Transport Plan.	Deliver Partner Advocate	Develop	Deliver	Deliver	Deliver
			Deliver community and business engagement programs and initiatives focusing on renewable energy and battery storage access and uptake, energy efficiency, electrification, and community renewable energy and battery storage projects.	Deliver Partner	Deliver	Deliver	Deliver	Deliver
	1.2 Know and share our climate risk Undertake holistic, evidence-based assessment and monitoring of climate risks to enable best-practice risk and investment planning as we prepare for extreme weather events and support community and business to do likewise.	Expand our understanding of local climate risks on our built and natural environment and our community and integrate evidence-based climate risk management into organisational decision making, investment planning and service delivery.	Develop and implement a framework to measure, monitor and report on local climate risks for CN and the community.	Deliver	Develop	Deliver	Deliver	Deliver
			Expand initiatives to communicate the local physical, social and economic risks from climate change, as well as the complementary roles and responsibilities in living with these risks.	Deliver Partner	Deliver	Deliver	Deliver	Deliver
	1.3 Resilient urban and natural areas Create resilient communities, economies and natural areas that prepare for and adapt to climate risks. Prioritise social equity and ensure vulnerable communities are not left behind.	Apply adaptive management to urban planning and development, infrastructure design and natural area management in response to increased climate risks from flooding, coastal erosion and inundation, storms, heatwaves, heat stress, drought, and bush and grass fires.	Develop and deliver a Climate Risk and Resilience Action Plan that prioritises initiatives to build more resilient communities, and urban and natural areas.	Deliver Partner	Develop	Deliver	Deliver	Deliver



Nature-based solutions



Newcastle 2040 priority	Newcastle 2040 objective	NES strategic priority	NES key deliverable (4-year delivery plan)	Our role	23/24	24/25	25/26	26/27
2.2 Harnessing Nature-based Solutions We manage and enhance our blue, green and natural spaces for biodiversity, recreational amenity and human wellbeing through education and engagement of our local community. We strengthen our blue and green grid through sustainable, integrated management that is adaptable to current and future risks. We regenerate our natural systems and work towards zero pollution through collaboration with our community and industry partners.	2.1 Regenerate natural systems Strengthen our natural environments, including our waterways and beaches, to support healthy, biodiverse systems; minimise pollution; and maintain recreational amenity as well as ecological and community value.	Apply the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Nature Futures Framework (Nature for Nature, Nature for Society and Nature for Culture) to guide projects and initiatives that respond to the climate change, nature loss and pollution crises. Build a network of high quality blue and green spaces that connects town centres, public transport hubs, schools and residential areas (a blue green grid) for enhanced liveability and biodiversity outcomes.	Expand the natural assets renewal program to improve the health and condition of our natural assets and biodiversity connectivity, including soil rehabilitation and carbon sequestration initiatives.	Deliver Partner				
	2.2 Expand the urban forest Manage and care for Newcastle's urban forest and maximise urban greening, resulting in a healthy, green and biodiverse city that provides economic, ecological and social benefits.		Deliver a targeted community engagement and incentive program to enhance connections with nature, expand our urban forest, and create connected canopy cover and vegetation for our iconic, threatened and pollinator species, including the Squirrel Glider.	Deliver Partner				
			Partner with our local traditional custodians to develop and implement cross-cultural ways of working for integrating indigenous knowledge and stewardship into how we care for and manage our land and respond to the climate emergency, for a regenerative future.	Deliver Partner				
			Develop and deliver an Urban Forest Action Plan to increase our urban forest, including greening on private and public land, and create a cool, resilient, pollinator friendly city.	Deliver Partner Advocate				
			Develop and deliver a Blue Green Grid Action Plan that maps our town centres, schools, public transport hubs and residential areas connected by 'blue' and 'green' links and prioritises initiatives to build and connect these blue and green links over time.	Deliver Partner				
			Develop and deliver a Water-Sensitive City Action Plan that prioritises stormwater harvesting and reuse, wastewater reuse, stormwater run off improvements, channel naturalisation, and that enhances and protects the health of waterways and wetlands and the catchments and coastlines that surround them.	Deliver Partner				
2.3 Achieve a water-sensitive city Integrate the water cycle in planning, design and construction to create liveable urban spaces. Capture water at the source, mitigate flood impacts through design, and create public spaces that collect, clean and recycle water.								



Circular economy



Newcastle 2040 priority	Newcastle 2040 objective	NES strategic priority	NES key deliverable (4-year delivery plan)	Our role	23/24	24/25	25/26	26/27
2.3 Circular Economy Through our transition to a circular economy, we design out waste, creating new opportunities and technologies in our local economy, promoting renewable products and sustainable infrastructure, and rethinking our use of resources as a circular flow	3.1 Design out waste Create sustainable material cycles through the city's economy. Establish resource recovery industries and circular economy precincts. Increase recycling and productive reuse of organics.	Improve circularity and resource recovery in CN's operations and supply chain, and support and advocate for industry, business and the community to transition to a circular economy.	Increase the utilisation of recovered materials and sustainable product alternatives in CN operations and construction works, including green concrete and other low emissions building materials; recycled glass, recycled aggregate; and recycled plastics.	Deliver Partner	Deliver	Deliver	Deliver	Deliver
	3.2 Localised supply chain and sustainable procurement Foster resilience and sustainability through procurement, resource-sharing and construction activities that preference local suppliers and supply chains.		Develop and implement a framework to measure, monitor and report on CN's procurement impact.	Deliver	Develop	Deliver	Deliver	Deliver
			Implement a local and sustainable procurement program based on the largest impact abatement potential, including reducing extraction of non renewable materials, mitigating scope 3 carbon emissions and minimising waste streams in CN's supply chain.	Deliver Partner Advocate		Deliver	Deliver	Deliver

Appendix 2

NES indicators and targets

CSP objective	Indicator	Target	Baseline	Source	CN role
All	Number of community actions undertaken to benefit the environment as a result of participating in CN programs and initiatives	Increasing number of actions (annual)	Baseline number of actions (2023/24)	CN data	Deliver
Net zero emissions	Greenhouse gas emissions from CN operations	Net zero emissions by 2030 (from transport fuels, fossil-based gas and LPG, water and wastewater and office paper)	5,098 tonnes CO ₂ e (Newcastle Climate Action Plan emissions profile 2020)	CN data	Deliver
	City-wide greenhouse gas emissions from electricity	100% reduction in greenhouse gas emissions from electricity by 2030 ¹	1,372,000 tonnes CO ₂ e in 2021 (64% of total emissions) (2021)	Snapshot Climate Australian Emissions Profiles - Newcastle municipal (LGA) emissions data	Partner Advocate
	Electric vehicle (EV) car sales in Newcastle LGA	Increased to 52% of car sales by 2030–31 ²	491 electric vehicles (0.3%) of all registered cars in the Newcastle LGA (31 March 2023)	ABS data	Partner Advocate
	Solar PV uptake in Newcastle LGA	Increasing trend (%) (annual)	24.1% dwellings in Newcastle LGA (2021)	Australian PV Institute data	Partner Advocate
Know and share our climate risk	Number of people signed on to CN's flood alert system	Increasing number of people (annual)	7,578 registrations across eight catchments (2021/22)	CN data	Deliver
Resilient urban and natural areas	Street and park tree species	No one street and park tree species represent more than 10% of the tree population (biannual)	One species over 10% in 2022 (<i>Lophostermon conferus</i> 11.4%)	CN TAMS data	Deliver
	Indicators in CN climate risk and resilience evaluation framework	Improvement in indicators (biannual)	CN climate risk and resilience evaluation framework (2023/24)	CN data	Deliver Partner Advocate

CSP objective	Indicator	Target	Baseline	Source	CN role
Regenerate natural systems	Condition of bushland areas managed by CN	20% of 91 bushland areas managed by CN have 'excellent' condition rating ³ by 2033	16% of 91 bushland areas managed by CN have 'excellent' rating (2022)	CN data (CN Bushland Service Asset Plan 2022) Condition of bushland areas determined by functionality (species diversity, weed % and canopy cover) and viability (connectivity, parcel geometry and soil)	Deliver
	Biodiversity corridor connections in Newcastle LGA	Two strategic biodiversity corridor gaps protected or enhanced at a landscape scale (annual)	Number of strategic biodiversity corridor gaps at landscape scale in Newcastle LGA (23/24 mapping)	CN Lidar data (2021), Hunter Regional Plan 2041, CN asset registers and urban forest Lidar canopy analysis	Deliver Partner
	Length of watercourses rehabilitated annually (metres)	Annual length (metres)	350 metres of watercourses rehabilitated (2022/23)	CN data	Deliver
	Satisfaction with our blue, green and wild spaces	Increasing trend (satisfied or very satisfied) (biannual)	63% satisfaction with parks and recreation areas; 60% satisfaction with beaches and beach facilities; 58% satisfaction with city's wetlands and estuaries; 51% satisfaction with city's bushland and waterways (2022)	CN satisfaction survey	Deliver
Expand the urban forest	Newcastle LGA tree canopy cover	40% tree canopy cover in Newcastle LGA by 2045	27.96% tree canopy cover in Newcastle LGA, excluding waterbodies (2021)	CN GIS data	Deliver Partner Advocate
	Road reserve and open space canopy cover under CN care and control	30% road reserve canopy cover by 2045 30% open space canopy cover by 2045	21.73% road reserve canopy cover (2021), and 25.04% open space canopy cover (2021) (excluding water bodies, natural areas and sports ground fields)	CN GIS data	Deliver
Achieve a Water-Sensitive City	Potable water use in CN operations	Decreasing trend (three-year average)	339,800 kL/year (three-year average 2019–2021)	Hunter Water data	Deliver
	Water-Sensitive Cities Index Score	Increasing overall Index Score (urban water management performance against 34 indicators) (biannual)	Benchmark score (2023/24)	Water-Sensitive Cities Index – CRC for Water-Sensitive Cities benchmarking tool	Deliver Partner Advocate

CSP objective	Indicator	Target	Baseline	Source	CN role
Design out waste	Indicators in CN sustainable procurement evaluation framework	Improvement in indicators (biannual)	CN procurement evaluation framework (2023/24)	CN data	Deliver Partner Advocate
Sustainable procurement and localised supply chain					

Endnotes

1 The IPCC (2018) Special Report on Global Warming of 1.5°C indicates that 1.5°C pathways with no overshoot (that are deemed to provide a one-in-two to two-in-three chance of limiting global heating to 1.5°C with no overshoot) include a rapid decline in the carbon intensity of electricity, and an increase in electrification of energy end use, with a reduction in the carbon intensity of electricity of about 90% between 2020 and 2030

2 Aligns with NSW Government's Electric Vehicle Strategy

3 See table to the right

Condition rating Description

Excellent	Bushland community structure in place with high resilience and viability connectivity ranking – bush regeneration and proactive response to vandalism as main tool for management to ensure parcel remains in this category
Very good	Main elements of bushland community structure in place, with capacity to regain structure over time if weed incursions are managed and viability connectivity ranking is positive – bush regeneration and some proactive canopy/vandalism response as main tool for management to ensure parcel can remain in this category/progress to green.
Good	Main elements of bushland community structure may be degraded over some of the parcel, with capacity to regain structure over time needing active management interventions. Weed incursions, edge effects need to be managed – bush regeneration and proactive canopy/understorey planting may be needed as main tool for management, with proactive vandalism response to ensure parcel can progress to blue/green.
Poor	Main elements of bushland community structure may be missing, with capacity to regain structure over time needing active management interventions. Weed incursions, edge effects need to be addressed for viability to be improved – active bush regeneration and restoration needed with proactive canopy/understorey planting may be needed as main tool for management, with proactive vandalism response to ensure parcel can progress to blue/green.
Very poor	Main elements of bushland community structure need replacing using active restoration management tools. Capacity to regain functionality will need prolonged Landcare efforts. Weed incursions, infrastructure and or local vandalism, misuse, and edge effects need to be addressed for viability to be improved – active bushland restoration needed with proactive canopy/understorey planting as main tool for management, with proactive vandalism response to ensure parcel can progress to orange/ or higher resilience and viability. Soil amelioration usually required.

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