



DRAFT
**WASTE AND CIRCULAR
MATERIALS STRATEGY**
2026-2030

Acknowledgement of Country

*Lake Macquarie City Council
dhumaan Awabakala ngarrakal yalawaa,
yalawan, yalawanan.*

Lake Macquarie City Council acknowledges the Awabakal people and Elders past, present and future.

*Dhumaan ngayin ngarrakalu
kirraanan barayidin.*

We remember and respect the Ancestors who cared for and nurtured this Country.

*Ngarrakalumba yuludaka bibayilin
barayida baaduka.*

It is in their footsteps that we travel these lands and waters.

Wording by the Aboriginal Reference Group and translated by Miromaa Aboriginal Language and Technology Centre.

Pinny Beach

Cover: E-waste with embedded batteries don't belong in kerbside bins or bulky waste. Free drop-off at Community Recycling Centres helps keep our staff, trucks and facilities safe from preventable fires.

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Message from the Mayor

I am pleased to share the Lake Macquarie City Council Draft Waste and Circular Material Strategy, which outlines how council and our community can work together on practical environmental solutions that will benefit residents well into the future.

As part of community engagement for our broader Lake Macquarie Community Strategic Plan 2025 to 2035, locals told us that protecting the environment and supporting sustainable development and growth are top priorities. That's why a strategy focused on waste and circular materials is vital in shaping our direction.

Lake Macquarie has made substantial progress in resource recovery and waste services in recent years. This is a meaningful achievement as we focus on reducing our overall waste output with a growing population.

The draft plan emphasises the importance of avoiding waste in the first place and increasing reuse and repair. These steps help reduce pressure on landfill, budgets, infrastructure and the environment.

The plan also lays out the economic opportunities in the circular economy, which keeps materials in use for longer through reuse, repair, sharing models and businesses that work with circular materials.

Lake Macquarie is already home to innovative businesses and social enterprises leading the way in this space. They are creating jobs, supporting local economic growth and reducing environmental impact at the same time.

We also realise that Council cannot accomplish this waste reduction strategy on our own. We need stronger cooperation across all levels of government to identify, fund and regulate large-scale solutions, along with support for specialist recyclers managing complex materials such as e-waste, soft plastics, textiles, tyres and lithium-ion batteries.

Lake Macquarie is a leader in advocating for broader systems and partnerships to support a resilient, circular future. This strategy outlines how we expect to stay on top of this vital and evolving space.

Cr Adam Shultz
Lake Macquarie Mayor



Message from the CEO

I am proud to say that Lake Macquarie enters the next phase of its waste and circular materials journey from a position of strength.

Through successive strategies and sustained investment, we have delivered strong results in resource recovery and landfill diversion, as one of the highest performing councils in NSW. These achievements matter, not only for the environmental outcomes they have delivered, but because they demonstrate how well we can respond to increasingly complex waste challenges.

One of our most significant achievements was the introduction of weekly food and garden organics recycling. Since this service commenced in 2018, domestic waste to landfill has reduced by around 20%. This has delivered substantial levy savings for the community, delayed the need for landfill expansion at Awaba, created jobs in organics recycling and returned large volumes of nutrient rich compost to productive use. It has also reduced greenhouse gas emissions by keeping organic material out of landfill.

Council has also invested in expanding access to safe, responsible disposal options for problem waste. Each year more than 13,000 residents use the Community Recycling Centre at Awaba, diverting hundreds of tonnes of items such as batteries, oils, paint and electronics from landfill. In response to community feedback, a second centre opened at Belmont North in 2025, improving access for residents on the eastern side of the lake.

At Awaba, early adoption of landfill gas capture technology has significantly reduced emissions while generating renewable electricity for the grid. Council has also developed targeted partnerships to tackle hard to manage waste streams, including a long-standing collaboration with local social enterprise Soft Landing to recycle mattresses, keeping valuable materials in circulation while supporting local employment.

These outcomes give us confidence as we move forward and implement a new waste and circular materials strategy, but there are many more complex challenges ahead.

Improving efficiency, safety and customer experience through better use of technology and data will be essential. So too will long term planning for residual waste management once landfilling at Awaba reaches its end, including careful assessment of emerging technologies and regional partnership options.

This strategy also recognises the growing impact of climate-driven events like storms and bushfires. Strengthening preparedness through collaboration with neighbouring councils and response agencies will be critical.

By building on proven delivery and planning for future demands, this strategy sets a clear and realistic path forward, and one that understands the needs of the community and the environment.

Tony Farrell
CEO

About this strategy

The strategy outlines where we are in our waste and resource recovery journey and responds to the growing challenges facing our waste services, including the finite capacity of landfill, rising disposal costs and associated greenhouse gas emissions. While Council continues to provide reliable waste collection and recovery services, long-term planning is required to ensure these services remain affordable, resilient and sustainable into the future.

Keeping essential services reliable and affordable is a priority for our community and a central consideration in our strategic planning. Structured, forward planning helps avoid reactive and higher-cost infrastructure decisions, enabling Council to manage long-term financial risks and contain cost pressures. Investment guided by our previous waste strategy, including the introduction of the three-bin system, the bulky waste service and modernisation of the Awaba Waste Management Facility, has positioned Lake Macquarie ahead of cost pressures affecting many other jurisdictions. This strategy continues that staged and deliberate approach to ensure essential waste services remain high quality and financially sustainable, helping keep the cost of living in Lake Macquarie affordable.

Advancing the circular economy transition in our city and region means moving beyond recycling alone. A circular economy aims to prevent waste from being created in the first place by reducing unnecessary consumption, encouraging reuse and repair, and keeping materials in use at their highest value for as long as possible.

The term circular materials refers to materials that are designed, recovered or reused in ways that reduce waste and maximise their value within the economy. This includes recycled materials used in new products, salvaged building materials, repaired goods and shared assets. By keeping materials circulating locally, circular approaches reduce pressure on landfill, lower waste management costs over time, support local jobs and strengthen economic resilience.

This strategy has been shaped through an ongoing conversation with our community and stakeholders, whose feedback has informed its outcomes and priorities. When the strategy refers to “we” and “our”, it reflects the shared responsibility of Council, residents, businesses and partners in managing waste and supporting the transition to a more circular economy. Implementation will be led through Council’s existing planning and delivery processes, supported by strong partnerships across the community and region.

Waste matters to our community. It's one of the most visible and tangible ways Council delivers for residents, touching every household, every week of the year.



Council waste collection vehicle at the Awaba Waste Management Facility

Waste and Circular Materials Strategy

Summary overview



Dropping off household problem waste at the Awaba Community Recycling Centre

This strategy directly supports achieving community outcomes of the Community Strategic Plan 2035 through the following seven waste and circular materials outcomes and enabling strategies:

 <p>Community outcome</p> <p>Through innovative resource management, our city is managing waste and building a circular economy</p>	 <p>Circular economic activity is increasing.</p> <ul style="list-style-type: none"> • Use Council's purchasing power to preference circular products and business practices. • Embed circularity in Council's capital and operating programs. • Increase reuse, repair, trade and share economy capacity. • Enable long-term infrastructure and partnerships that support recycling and circular economy growth in our region.
 <p>Resources are conserved.</p> <ul style="list-style-type: none"> • Engage with our community to promote resource conservation and mindful consumption. 	 <p>Food waste is decreasing.</p> <ul style="list-style-type: none"> • Support our community to reduce the amount of food going to waste.

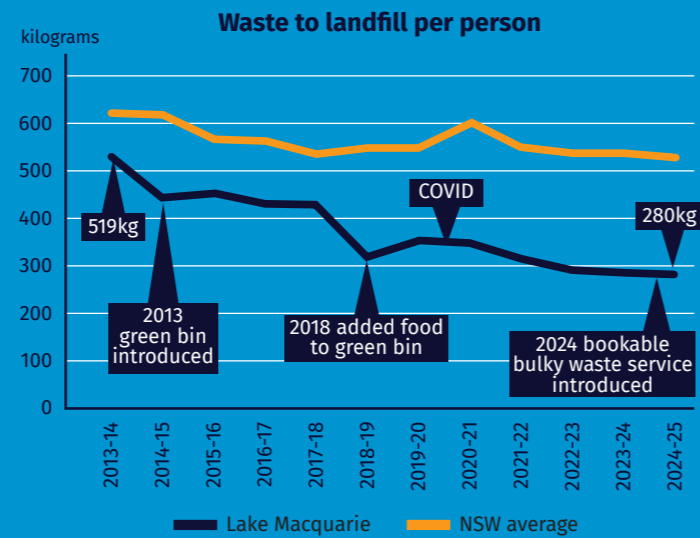
 <p>Community outcome</p> <p>Greenhouse gas emissions are decreasing in our city</p>	 <p>Greenhouse gas emissions from waste operations are decreasing.</p> <ul style="list-style-type: none"> • Reduce operational emissions at our landfill. • Increase food and organic waste recovery. • Reduce emissions from waste transport and handling.
 <p>Total waste to landfill is decreasing.</p> <ul style="list-style-type: none"> • Advocate for improved resource recovery outcomes. • Engage with our community to promote better recycling practices. • Maintain and improve resource recovery from Council-operated waste services. 	

 <p>Community outcome</p> <p>Council services meet community needs</p>	 <p>We are prepared for our city's future waste management challenges.</p> <ul style="list-style-type: none"> • Develop long-term solutions for managing residual waste. • Ensure the long-term financial and operational sustainability of the Awaba Waste Management Facility. • Plan for disasters and emergencies. • Monitor and respond to emerging and identified problem waste streams.
 <p>Waste services are reliable and affordable.</p> <ul style="list-style-type: none"> • Contain costs to help deliver more affordable and dependable kerbside collection services. • Improve and streamline our customer experience. • Manage Illegal dumping and public waste. 	

Delivering results

Where we are now

Lake Mac is among the top performing local governments for domestic waste resource recovery in NSW¹. Our Waste Strategy 2015-2023 identified the introduction of food and organics recycling as a key initiative to reduce waste to landfill and, consequently, manage the cost of our waste service for residents. This was delivered in 2018. Other significant achievements include the introduction of a bookable bulky waste service in 2024 and establishment of a second Community Recycling Centre in 2025.



Food and garden organics recycling

Since introducing weekly green bin collections of food and garden organics (FOGO) in 2018, we have seen:

- 20%** domestic waste reduction to landfill
- \$41m** in levy savings
- 4 year** delayed need in landfill expansion
- 12** full-time jobs created
- 270,000t** organic waste diverted from landfill
- 150,000t** of compost produced
- 432,000t** CO₂e emissions avoided²

Kerbside collection

- Three-bin collection service**
- 73%** customer satisfaction rate³
- Bookable bulky waste service**
- \$5m** reduction in operating cost over 10 years (projected)
- 2,500t** reduction in bulky waste to landfill in first year of bookable service

Gas capture from landfill

Since installing a gas capture system at Awaba Waste Management facility in 2006, we have:

- Prevented 40m m³** methane escaping
Equivalent to 809,000t Co₂ emissions⁴
- Equivalent to a 747 flying 9,000,000km** or 225 times around the world⁵
- Generated 5,500MWh** electricity - enough to power 1,100 homes annually⁶

Community Recycling Centres

- 2** CRCs (east and west sides of city)
- Free** drop off solution for problem waste
- 13,000+** visits per year
- 1,100 tonnes** of problem waste recovered since 2015

Problem waste management

- 99,000** mattresses recycled
Saving 2,411 tonnes of waste entering landfill since 2015
- 11** battery recycling points at Libraries & Council facilities
- 1,500+** participants at Chemical CleanOut events
Saving 64,000kg chemical waste per year

Supporting community reuse, repair and share economy

Supporting residents, schools and business to avoid waste:

- Super Street Sales
- Repair Cafes
- Op Shop Trail
- Lake Mac Library of Things
- Fab Lab

Community education and participation programs

- Clean Up Australia Day
- Eco Angel program
- Plastic Free July
- Annual Living Smart Festival
- Sustainable Neighbourhood Groups

Circular practices in Council operations

We are embedding circular economy principles into the way we manage our \$3 billion asset portfolio. Repair and reuse are becoming standard practice, whether remanufacturing replacement components, repurposing surplus materials or rethinking how services are delivered. This shift supports the city's transition from a traditional linear economy to one where resources are kept in use for as long as possible.

¹ NSW EPA (2024), [NSW waste and recycling performance data](#).

² Australian Government (2021), [National Greenhouse Accounts Factors - Table 47: Waste mix methane conversion factors](#).

³ Lake Macquarie City Council Customer Satisfaction Survey 2024.

⁴ Australian landfill gas accounting conventions (NGER/IPCC AR5).

⁵ Carbon Independent (2024), [Aircraft carbon emissions per kilometre](#).

⁶ Australian Energy Regulator: [Annual electricity consumption 2025](#).

What our community told us

Waste matters to our community. It's one of the most visible and tangible ways Council delivers for residents, touching every household, every week of the year. While we've led the region in resource recovery and landfill diversion, our community sees the opportunity to go further by avoiding waste, tackling hard-to-recycle materials, and unlocking the economic potential of a more circular local economy.

Ways we engaged with our community

This strategy reflects feedback provided through community surveys and research, community engagement campaigns and community-initiated enquiries over time.

Alongside community engagement, Council works closely with waste operators, local businesses, neighbouring councils and regional partners. These ongoing conversations helped inform the priorities and direction of this strategy.



Waste engagement pop-ups provide opportunities for staff to share service information and hear community feedback on what's working well and where improvements can be made

Engagement findings - what did we hear?

-  People want waste to be managed sustainably and collaboratively across the region⁷
-  People want to stop creating so much waste⁷
-  A regular and reliable kerbside bin collection is critical to our residents⁸
-  People would like to see more recycling options, especially soft plastics and textiles^{7,9}
-  People would like more focus on managing waste in public places and in the natural environment¹⁰
-  There is appetite for more ambitious initiatives to build a circular economy in Lake Mac⁷
-  Emissions reporting requirements means that businesses need to manage their waste better⁷

⁷ IER (2025) Living Smart Festival 2025 Report. Internal Report.
⁸ Lake Macquarie City Council (2024). Environmental Attitudes Survey 2024. Internal report.
⁹ Lake Macquarie City Council (2023). Future Waste Solutions Survey 2023. Internal report.
¹⁰ Lake Macquarie City Council (2023). Liveability Census 2023. Internal report.

Key engagement touchpoints

SEPTEMBER 2025

Living Smart Festival

Local festival with 10,000+ attendees and hundreds of waste conversations each year. Across the 2023–2025 events, nearly 400 participants contributed to surveys on future waste solutions, household food-waste behaviours, and the Living Smart Research Report.

APRIL-JUNE 2025

Waste Services information and engagement stalls held at shopping centres and community hubs in Glendale, Morisset, Mount Hutton, Swansea and Windale.

NOVEMBER 2024

Environmental Attitudes Survey

Four-yearly research project focused on our community's environmental attitudes and behaviours. 280 phone and 100 online interviews. 380 respondents, with 95% confidence level.

JANUARY – MAY 2024

Targeted industry meetings

Meetings with health and aged care providers, property managers and developers, hospitality, and local social enterprises.

Bulky waste service transition and waste education

Pop-up information stalls held at eight shopping centres around the city and one over 55s expo. Presentations to four community groups and service clubs. More than 600 conversations recorded.



Swapping crops at Lake Mac Eco Exchange in February 2025

Other community engagement activities that informed this strategy

JUNE 2025

Australian Liveability Census

Online benchmarking survey, independently facilitated. 1,149 responses.

APRIL-JUNE 2025

Primary and high school competitions

Council-run competitions to imagine the future for Lake Macquarie City.

83 primary school students submitted artworks, many featuring waste and recycling themes.

AUGUST 2024

Check-in survey

Online survey sent to 187 people who either attended 100 Voices community summit or provided feedback through Shape Lake Mac to inform the Lake Macquarie City Community Strategic Plan 2025-2035.

54 responses.

MAY 2024

Community pop-ups

Four in-person sessions at Glendale, Speers Point, Toronto and Belmont.

Shape Lake Mac

Community discussion boards and direct submissions about the Lake Macquarie City Community Strategic Plan 2025-2035.

113 comments and submissions.

APRIL 2024

100 Voices community summit

In person, five-hour summit, independently facilitated. 89 attendees from 117 invited participants.

Ages 16-74 represented from 40+ Lake Macquarie suburbs.

MARCH 2024

Community Satisfaction Survey

Phone survey, independently facilitated. 600 participants.

Challenges and opportunities

In response to what our community told us, this strategy commits to maintaining high-performing resource recovery services while also addressing the growing challenges and opportunities facing our waste system.

Landfill capacity is finite, disposal costs continue to rise, and opportunities to develop new disposal facilities are limited. If current approaches continue unchanged, Lake Macquarie will face increasing financial, environmental and service delivery pressures in the decades ahead.

This strategy recognises that maintaining reliable waste services in the short term must be matched with deliberate action to reduce waste generation and plan for how residual waste, being the waste remaining in red bins after recycling and organics have been removed, will be managed in the future.



Responding to national and state policy direction

Lake Macquarie is not alone in facing these challenges. Across Australia, waste and resource recovery systems are under increasing pressure from rising waste volumes, higher disposal costs, finite landfill capacity and growing expectations to reduce greenhouse gas emissions.

In response, Federal and State governments are signalling a clear shift in policy direction toward reducing greenhouse gas emissions from landfill, recovering food and organic waste, advancing circular economy markets and practices, and planning for alternative residual waste treatment solutions and processing capacity beyond landfill.

These directions recognise that recycling alone is no longer sufficient, and that coordinated action is required. This strategy responds to these evolving policy settings while reflecting local conditions and community priorities.

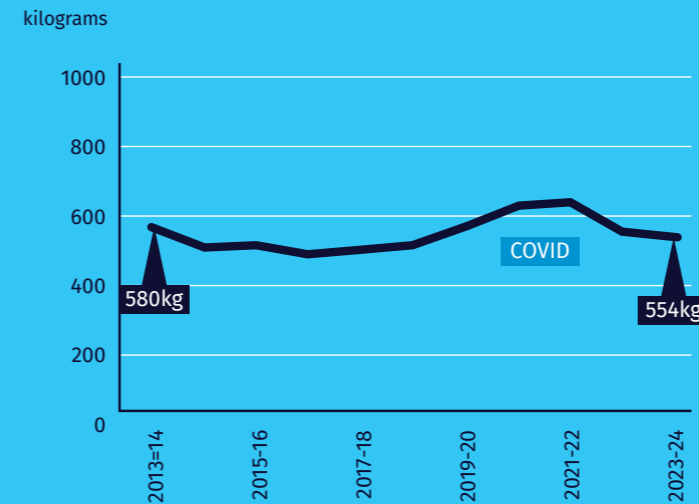
We continue to produce a lot of waste

Despite strong progress in recycling and landfill diversion over the past decade, overall waste generation in Lake Macquarie remains high. Residents still produce around 554kg of domestic waste per person each year.

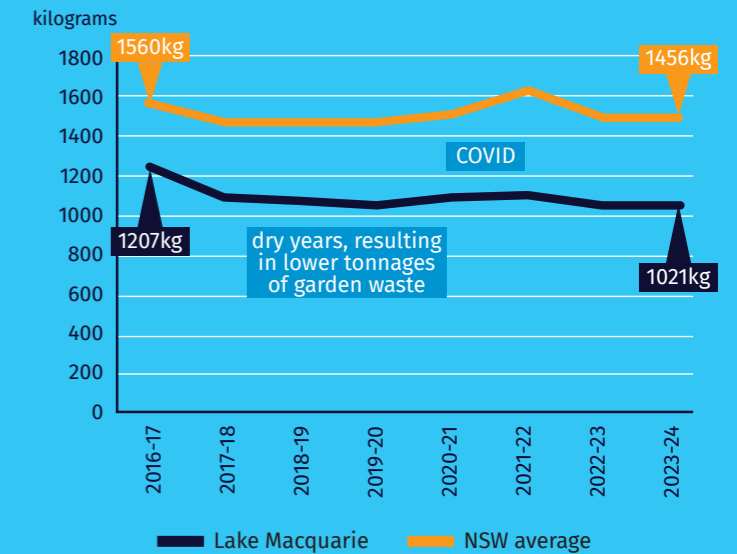
Australia has one of the highest per-person resource consumption levels in the world, second only to the United States. If everyone consumed like Australians, the world would require 4.1 Earths to sustain that level of demand.¹¹ These consumption patterns reflect broader national and global trends and present a shared challenge for governments, industry and communities.

Local waste data reflects this reality. While we have achieved significant gains in resource recovery, total waste generation per person has remained relatively stable, mirroring statewide trends. There have been short-term fluctuations including increases during the COVID-19 pandemic and recent reductions following the introduction of the bookable bulky waste service, but the underlying picture is clear: **recycling alone cannot solve the challenges we face from high waste generation.**

Total annual domestic waste produced per person in Lake Macquarie (kerbside bins and bulky waste)



Total annual kerbside bin waste per household¹²



While Lake Mac households generate less kerbside waste than the NSW average¹², our overall waste generation has only fallen by 15% since 2016. In contrast, our landfill disposal decreased by 34% over the same period, driven by Council's investment in high-performing recycling services. This highlights the success of our recovery infrastructure but also underlines the ongoing challenge: we are still producing large volumes of waste.

Even as recovery improves, the total volume of waste being generated remains significant, continuing to place pressure on infrastructure, budgets and the environment.

After reduction, reuse and recycling efforts, a substantial volume of residual waste remains. For the life of this strategy, landfill will continue to be the primary method for managing this residual waste.

Council's investment in the Awaba Waste Management Facility provides a period of medium-term landfill self-sufficiency. This creates a valuable but limited window to plan deliberately for how residual waste will be managed in the future.

Long-term residual waste planning is one of the most significant service delivery and financial risks facing Council. Decisions made during this strategy's implementation period will shape waste costs, emissions and service continuity for decades to come.

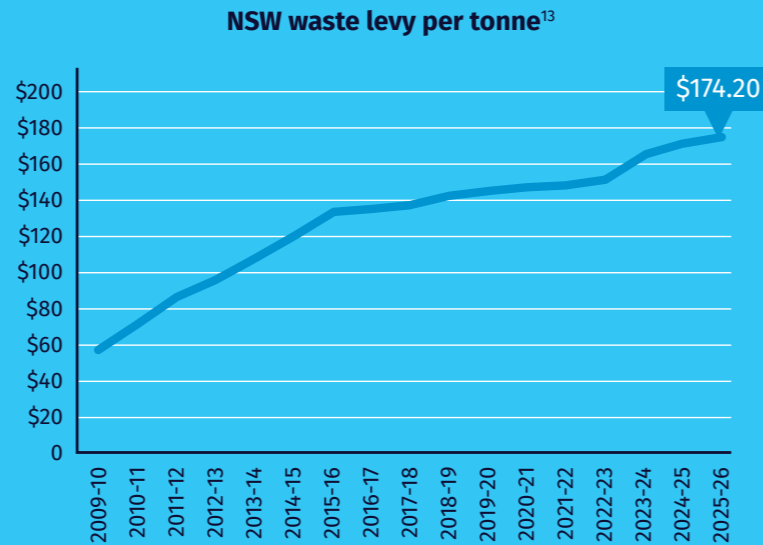
¹¹ Global Footprint Network National Footprint Accounts (2019). Accessed December 2025.

¹² Local Government Waste and Resource Recovery Data Report 2022-23. Total Domestic Waste Collected by Councils (Table 16, p. 27). Accessed December 2025.

Landfilling waste is expensive

Our landfill at Awaba has limited space and expanding it is costly. Reducing, reusing and recycling waste, delays the need for expansion and slows the rise of waste charges.

The more waste we send to landfill, the more it costs us as a community. Lake Macquarie residents and businesses currently pay about \$11 million annually in waste levy fees to the NSW Government.



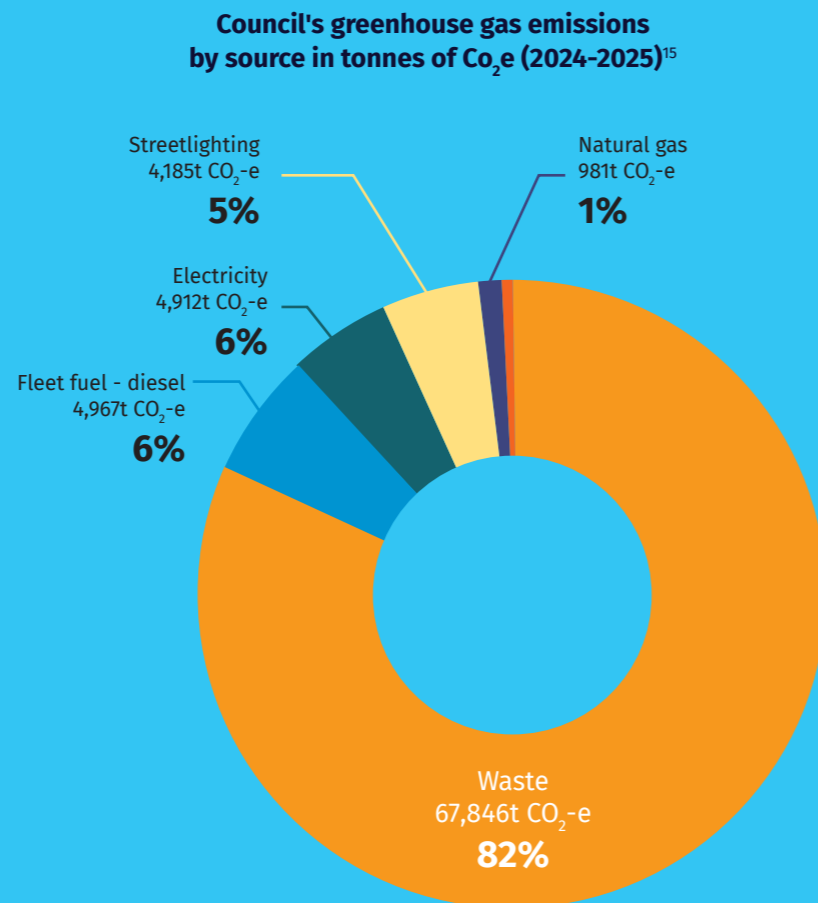
Council's greenhouse gas emissions by source

Landfills release large amounts of methane emissions, a potent greenhouse gas.

In our city, methane emissions from the Awaba Waste Management Facility accounts for 82% (or 67,846 tonnes) of the greenhouse gas emissions within Council's operational control¹⁴.

Most councils across Australia face a similarly high proportion of their emissions attributed to the landfilling of their communities' waste.

While we have invested in landfill gas capture at Awaba and continue to reduce emissions across our operations, methane from decomposing waste remains a significant and ongoing challenge. This matters because both the Australian Government and the NSW Government have set ambitious Net Zero by 2050 climate targets making landfill methane a critical challenge for councils.



¹³ NSW EPA (2026) [NSW Metropolitan Levy Area rates](#).

¹⁴ Lake Macquarie City Council. (2024). Climate Action Plan for Council Operations. February 2024. Internal Report.

¹⁵ Dashboard data source: 100% Renewables NGERs greenhouse gas emissions calculator outcomes based on LMS Awaba Landfill Site Reports (2024-25 Landfill Gas Summary).

Technology is not (yet) the answer

Disposing of waste without resorting to landfill depends on technology to turn our waste into useful resources such as compost, energy, building materials or other products. However, many of these technologies are in the early stages of implementation in Australia, or we don't have the volume of waste in Lake Macquarie to make them commercially viable on our own.

We can't just rely on recycling our waste

Our residents are strong recyclers, yet many materials such as hard and soft plastics, packaging, textiles, furniture and building materials still end up in landfill because they are complex composites or lack viable recycling markets. National requirements for greater recyclability and recycled content have been delayed, and confusing labelling continues to result in incorrect disposal and contamination.

While Council has invested in best-practice recovery systems, recycling alone will not deliver the next step change required to significantly reduce waste and its impacts. Expanding our focus on waste avoidance, reuse, repair and circular materials is a necessary complement to managing residual waste. These approaches reduce the volume of waste entering the system, slow the consumption of landfill space, lower exposure to rising disposal costs and reduce greenhouse gas emissions.

One area of particular opportunity is growing the local reuse and repair sector to reduce waste while supporting local jobs, easing cost-of-living pressures for households and strengthening community resilience.

A companion paper to this strategy, *Unlocking the Value of Reuse and Repair: Opportunities for Waste Avoidance in Lake Macquarie*, examines current activity and opportunities to expand these practices. Its findings have informed priorities in this strategy and are available on our website.



Recycling tyres into safety matting at Tyrex, Cardiff



Our strategy **Waste and circular materials outcomes for Lake Macquarie**

Our strategy identifies seven outcomes that will guide service delivery, investment, advocacy and partnerships in the years ahead. These outcomes are a direct response to the identified challenges and opportunities, informed by data analysis, community engagement, industry research and best-practice review. Together, they form a clear and coordinated framework for action.

The outcomes follow the waste hierarchy, consistent with contemporary waste and circular materials strategies, and reflect a structured approach to reducing waste generation, improving material outcomes and managing residual waste over time.

They reflect what our community told us they value most: reducing waste, protecting the environment, supporting a strong local economy and keeping essential services reliable and affordable. They also align closely with the direction of Federal and NSW Government policy promoting waste avoidance, improved recovery, food waste and emissions reduction and the transition to a circular economy. This positions Lake Macquarie to contribute to national and state goals while building on the progress already achieved through early adoption of best-practice resource recovery and circular initiatives.

Waste avoidance, reuse and repair deliver benefits beyond waste reduction, including local jobs, lower cost-of-living pressures and stronger community resilience.

Planing recycled timber to make new furniture at Rustic Art, Cardiff

Outcome 1: Circular economic activity is increasing.

Opportunity for Lake Macquarie

The shift to a circular economy presents a major opportunity for economic development in Lake Macquarie.

A circular economy moves away from the linear 'take, make, dispose' model to one where the value of materials is preserved through repair, reuse, sharing and recycling. Waste is minimised, and economic value is retained locally. This is especially important for Lake Macquarie, a city transitioning away from extractive and emissions-intensive industries such as coal mining and power generation.

Consultancy firm KPMG analysed the long-term economic benefits of transitioning to more circular practices across major Australian industries, including utilities, transport, construction and food production. The study estimated national net benefits of up to \$210 billion and 17,000 full-time equivalent jobs by 2048¹⁶.

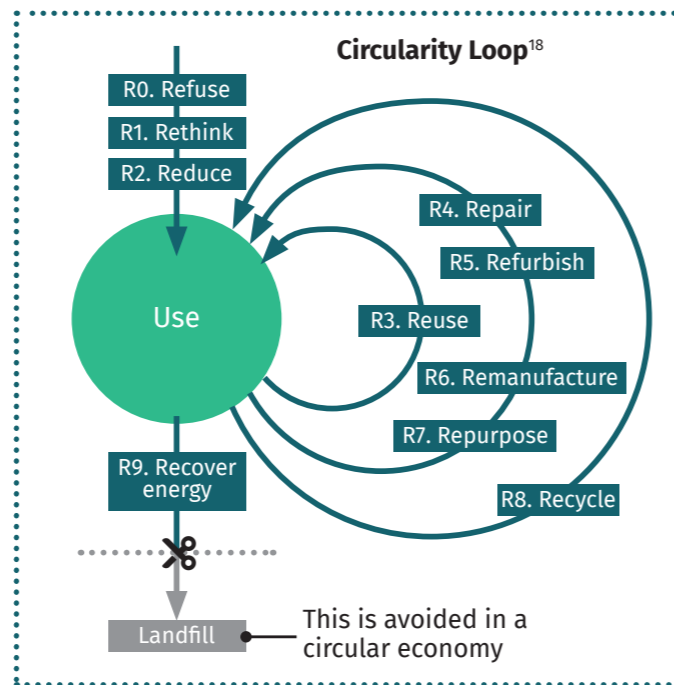
On a pro rata basis, this would represent a potential net benefit of more than \$1.6 billion to the Lake Macquarie economy and approximately 135 additional full-time equivalent jobs over the next two decades.

Supporting the development of local recycling and remanufacturing industries, creating jobs and stimulating economic growth is a key outcome for this strategy.

Practical frameworks for circularity

The smaller the loop in the Circularity Loop diagram below, the less energy and intervention required, with landfill the least favourable option¹⁷.

Similarly, five key global business models have been identified to support circular economic transition, ranging from product-as-a-service models to resource recovery and circular inputs. These show that circularity can be commercially viable across many sectors, not just traditional waste or recycling industries.



Circular economy business models¹⁹

<p>Circular supply</p> <p>Replace standard material inputs with recovered, modular, renewable or bio-friendly inputs.</p> <p>Efficiency driver: Close material loops</p>	<p>Resource recovery</p> <p>Manufacture secondary raw materials from waste streams, and avoiding raw materials use.</p> <p>Efficiency driver: Close material loops</p>	<p>Product life extension</p> <p>Extend product lives through design innovation, repair and use efficiencies.</p> <p>Efficiency driver: Slow material loops</p>	<p>Sharing</p> <p>Increase use of existing products and assets through larger user groups.</p> <p>Efficiency driver: Narrow resource flows</p>	<p>Product as a service</p> <p>Provide services rather than sell products/assets with ownership remaining with supplier.</p> <p>Efficiency driver: Narrow resource flows</p>
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From concept to practice - global perspective

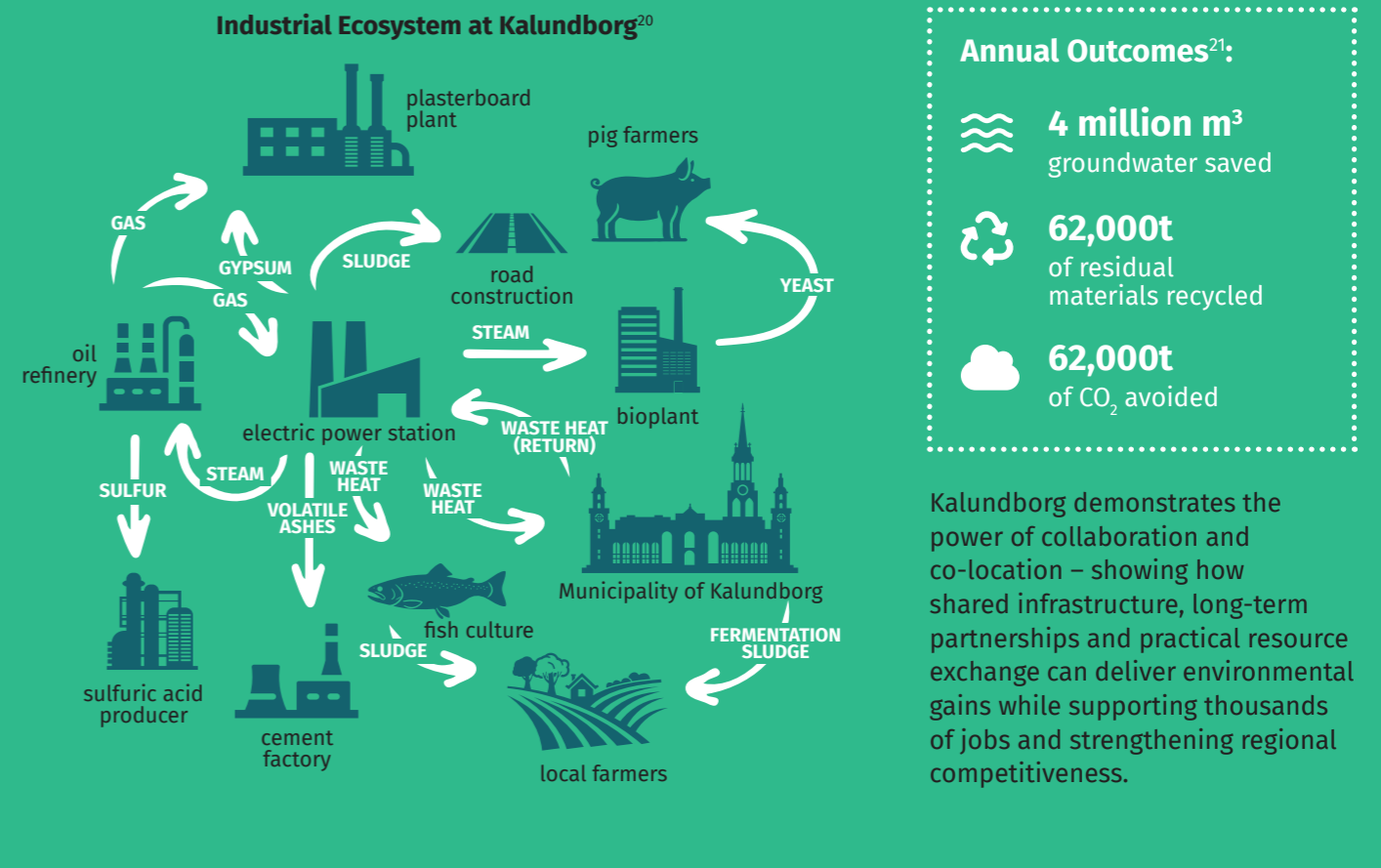
Internationally circular economy precincts are commonly developed to co-locate compatible industries that share resources to create efficient, closed-loop systems.

Case study

Circular economy precinct - Kalundborg Symbiosis, Denmark

Located 100km west of Copenhagen, Kalundborg is one of the world's best-known examples of industrial symbiosis in action. The industrial park operates as a closed-loop system, where companies exchange materials, water and energy directly. This reduces waste, lowers emissions and saves on operational costs while generating new revenue streams for the businesses.

Today, 17 major partners, ranging from biotech and pharmaceutical manufacturers to wastewater treatment and an advanced bioethanol facility, are physically connected through a network of shared pipelines, heat loops and material recovery systems. More than 30 different resource streams flow between businesses, allowing one company's surplus to become another's input. This reduces waste, cuts emissions and lowers operating costs while strengthening economic resilience across the precinct.



Kalundborg demonstrates the power of collaboration and co-location – showing how shared infrastructure, long-term partnerships and practical resource exchange can deliver environmental gains while supporting thousands of jobs and strengthening regional competitiveness.

¹⁶ KPMG Economics (2020), *Potential Economic Pay-off of a Circular Economy*, KPMG Australia. Accessed 28 April 2025.
¹⁷ Cruz Rios, F. et al (2021), "Barriers and Enablers to Circular Building Design in the US: An Empirical Study", *Journal of Construction Engineering and Management*, vol 147, issue 10, p2. Accessed April 2025.
¹⁸ Potting et al (2018), *Policy Brief - Circular Economy: What We Want To Know And Can Measure*, p11. Accessed April 2025.
¹⁹ Source: OECD (2019), *Business Models for the Circular Economy: Opportunities and Challenges for Policy*. Accessed May 2025.

²⁰ Dufloy, Joost & Sutherland, John & Dornfeld, David & Herrmann, Christoph & Jeswiet, Jack & Kara, Sami & Hauschild, Michael & Kellens, Karel. (2012). *Towards energy and resource efficient manufacturing: A processes and systems approach*. *CIRP Annals - Manufacturing Technology*. 61. 587-609. 10.1016/j.cirp.2012.05.002. Accessed December 2025.
²¹ Kalundborg Symbiosis (2025). *Surplus from circular production*. Accessed December 2025.

Outcome 1: Circular economic activity is increasing.

From concept to practice - local perspective

Case study

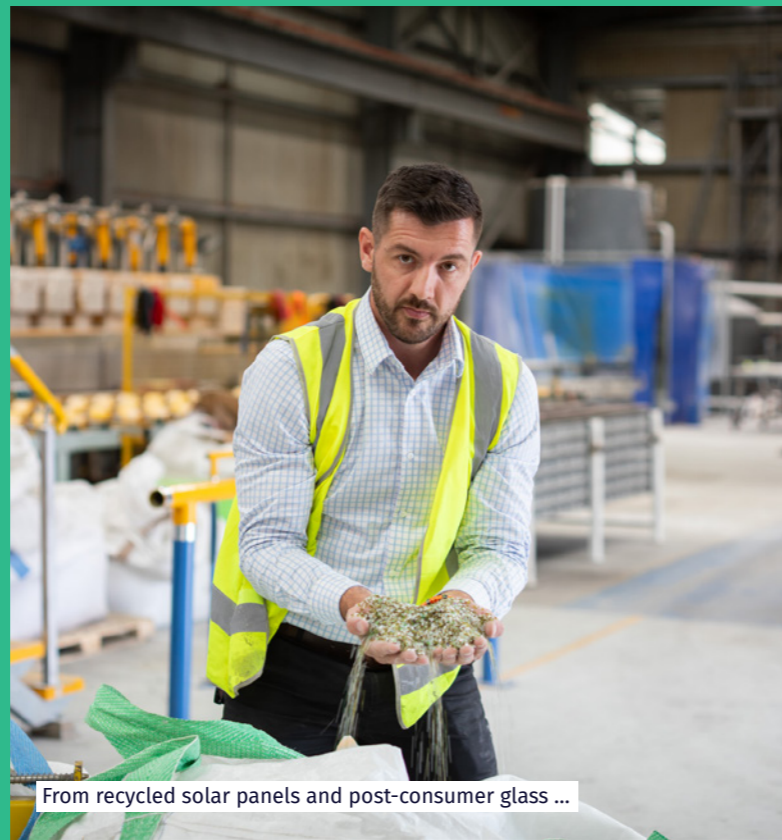
Closer to home, Lake Macquarie already has a strong base of circular economy enterprises. These include manufacturers using recycled materials to create new products, businesses focused on deconstruction and resale of building materials, reuse and repair services, and a network of charitable reuse operations supporting local communities and extending the life of everyday goods.

Turning waste glass into benchtops - Eco Surfaces Australia, Lake Macquarie

Eco Surfaces Australia, based in Cardiff, repurposes post-consumer glass sourced locally, including from old solar panels. This material is transformed into high-quality benchtops, splashbacks and outdoor surfaces, providing a sustainable alternative to traditional construction products.

Each benchtop incorporates about 450 recycled glass bottles, diverting significant waste from landfill. They also offer a safer alternative to traditional engineered stone by using recycled glass with amorphous silica, helping address health concerns associated with crystalline silica exposure²².

Eco Surfaces' commitment to sustainability and local manufacturing supports our local economy and demonstrates the potential of circular economy principles in creating durable, safe and aesthetically pleasing building materials.



From recycled solar panels and post-consumer glass ...



... to safer, high-value engineered benchtops

²² Eco Surfaces (2025) *Redefining Benchtops: Eco Surfaces Australia's Commitment to Sustainability - Eco Surfaces Australia recycled glass benchtops.*

How we'll get there - our strategies and priorities

1.1 Use Council's purchasing power to preference circular products and business practices

- 1.1.1 Strengthen procurement practices to trial and evaluate circular products
- 1.1.2 Embed processes to specify circular materials and services as standard practice

1.2 Embed circularity in Council's capital and operating programs

- 1.2.1 Increase the use of recycled and salvaged materials across Council capital and operational programs
- 1.2.2 Establish systems and governance to support the responsible reuse, resale and management of Council assets and materials

1.3 Increase reuse, repair, trade and share economy capacity

- 1.3.1 Support the growth and accessibility of community-based reuse, repair and sharing initiatives
- 1.3.2 Strengthen partnerships to recover and redistribute reusable materials through community and social enterprise networks

1.4 Enable long-term infrastructure and partnerships that support recycling and circular economy growth in our region

- 1.4.1 Plan for and facilitate future circular economy infrastructure through land-use planning, site identification and enabling policy settings
- 1.4.2 Strengthen regional partnerships and industry engagement to support investment, innovation and coordinated infrastructure development

Outcome 2: Resources are conserved.

Opportunity for Lake Macquarie

Avoiding waste is the most effective way to conserve resources and cut emissions. About 70% of global greenhouse gases come from extracting and producing materials, so reducing demand for new products makes a big difference. Alongside innovations in design and manufacturing, everyday choices to reuse, repair or repurpose items help keep materials in use and out of landfill.

Reuse, repair and sharing also offer major economic and social benefits for Lake Macquarie. These circular activities create up to 25 times more jobs than recycling and 80 times more than landfill per tonne of material. For every 10,000 tonnes of goods handled, the sector can support more than 200 full-time jobs and hundreds of volunteer roles, many providing opportunities for people facing barriers to work²³.

With more than 1,700 local businesses already active in reuse and repair industries, Lake Macquarie is well placed to lead in circular innovation while creating local jobs, lowering costs for households and strengthening community resilience.

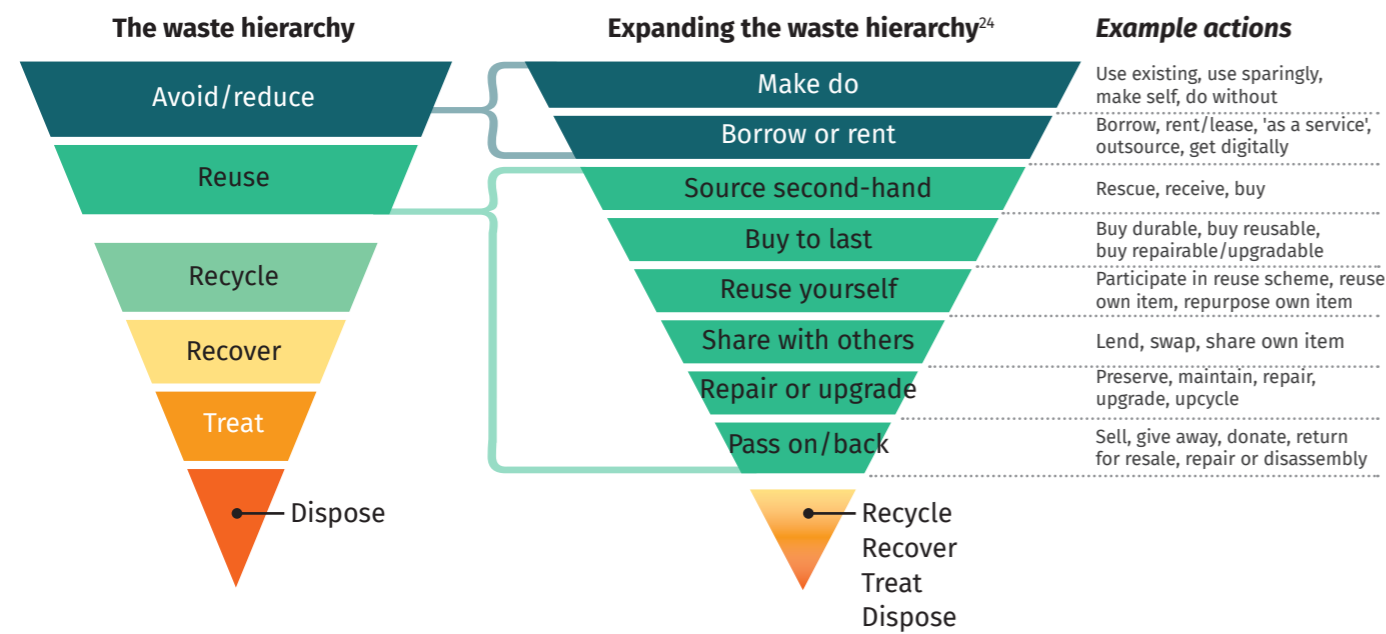
Reducing cost of living pressures

Reusing and repairing also helps households save money. Charitable Reuse Australia estimates that reuse organisations delivered \$432 million in community savings nationwide in 2022–2023 from buying or receiving second hand goods compared to buying new²³. Proportionally, this represents about \$11 million in annual savings for Lake Macquarie residents through local reuse stores and repair services.

These activities also strengthen domestic supply chains by keeping materials in circulation.

From concept to practice: Preventing waste through expanded waste hierarchy

The diagram below highlights the preferred approaches for reducing and managing waste. The expanded version details practical actions for preventing waste before it occurs through borrowing, repairing, sharing, and buying to last.



²³ K Heinrich, L De Garis, and M Rawson (2024), *Measuring Reuse Activity and Impacts in NSW: Executive and Report*, Charitable Reuse Australia and NSW Environment Protection Authority, p5, 13. Accessed April 2025.

²⁴ BehaviourWorks Australia / Monash University, for DCEEW (2022). *Framework for Understanding, Measuring & Communicating Waste Prevention*. Accessed April 2025.

From concept to practice - local perspective

Case study

Repairing lives and reducing waste - Survivors R Us, Lake Macquarie

Survivors R Us (SRU) supports people experiencing domestic violence, homelessness and unemployment through practical assistance and community connection. Since 2017, SRU has helped more than 120,000 people by redistributing food, clothing, furniture and essential items.

SRU design and upcycling workshop:

On-site sewing and repair teams transform donated materials into new, high-quality items such as reusable cotton bags, toys, pillows and household textiles, extending product life and reducing waste.



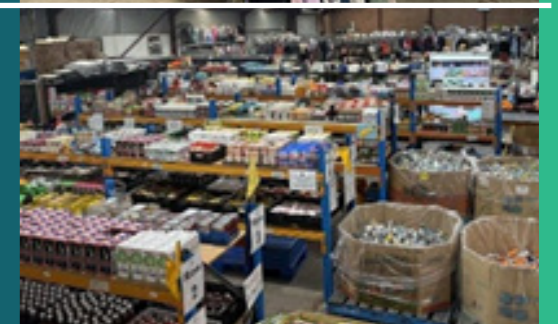
Op shop and furniture hub:

Their extensive reuse shop supplies affordable furniture, clothing, appliances, books, toys, sporting goods and tools to the community, diverting significant volumes from landfill.



Food pantry and cafe:

In partnership with Foodbank, OzHarvest and others, SRU rescues and redistributes more than 1,000 tonnes of surplus food each year through its community pantry, prepared frozen meals and the Safe Sip Cafe, which provides free meals, coffee and hospitality training in a welcoming, social space.



How we'll get there - our strategies and priorities

2.1 Engage with our community to promote resource conservation and mindful consumption

- 2.1.1 Strengthen community education and engagement to promote resource conservation, waste avoidance and mindful consumption
- 2.1.2 Partner with local organisations and initiatives to promote and normalise practical, community-led approaches to responsible consumption

Outcome 3: Food waste is decreasing.



Raising awareness in the community about simple, practical ways to reduce food waste and save money at home

Opportunity for Lake Macquarie

Food waste is a global challenge with environmental, economic and social consequences. NSW households throw away about 688,000 tonnes of food each year²⁵, while nationally Australian households waste an average of 113kg of food annually²⁶. Meanwhile, local charities are reporting increases in the number of families seeking food assistance, consistent with state-wide data showing over 100,000 people needing food relief in NSW each month²⁷.

In response to this growing need, both the Federal and NSW Governments are introducing programs that fund partnerships between food businesses and food rescue organisations, along with initiatives that help households reduce food waste. Lake Macquarie is fortunate to have several active food rescue charities operating in our city, many of which are already accessing this support to expand their capacity. Council will continue exploring ways to facilitate stronger connections between local businesses, food rescue partners and households in need so that more edible food is recovered and redistributed within our community.

Reducing cost of living pressures

Avoiding food waste is one of the simplest ways households can save money while also helping the environment. Across Australia, wasted food costs the economy an estimated \$36.6 billion every year, with the average household wasting between \$2,000 and \$2,500 annually on food that could have been eaten²⁸.

In Lake Macquarie, household bin audits reveal that food waste makes up about 9.7 % of total domestic waste, or about 9,800 tonnes each year. That's the equivalent of 2.45 million full grocery bags of food (about 28 bags per household) being thrown away annually.

Research by OzHarvest shows that 24% of household food waste is made up of edible leftovers, with an estimated value of \$13.50 per kilogram²⁹. Applying that to Lake Macquarie's waste data means our community is discarding about 2,350 tonnes of edible food annually, worth an estimated \$32 million.

Reducing this waste by even a small margin would deliver immediate household savings, lower disposal costs and reduce the city's environmental footprint.

Simple actions like planning meals, storing food correctly and using leftovers offer practical ways every household in our city can make a difference.

From concept to practice - local perspective

Case study

Rescuing food, supporting people - Food rescue in Lake Macquarie

Two leading food rescue charities, OzHarvest and SecondBite, are reducing waste and feeding the community. Working with local supermarkets, cafes, bakeries and producers, they recover surplus food that would otherwise go to landfill and redistribute it to people in need.

Local impact

Together, they rescued more than 817 tonnes of fruit & vegetables, bakery items, and other perishables in 2024–2025, redistributing the equivalent of more than 1.6 million meals through partnerships with 30 local charities. Their work delivers social benefits by easing cost-of-living pressures for thousands of Lake Macquarie households. Their partnerships demonstrate how food rescue helps build a more resilient, equitable and circular local economy, turning waste into nourishment and community strength.



Rescued food, re-imagined into delicious meals with creative initiatives like community food trucks

How we'll get there - our strategies and priorities

3.1 Support our community to reduce the amount of food going to waste

- 3.1.1 Support food rescue and redistribution initiatives that divert edible food from landfill while delivering social and environmental benefits
- 3.1.2 Strengthen local food systems and community initiatives that reduce food waste through education, practical skills and preventative approaches

²⁵ NSW Government (2025) *About food waste | Love Food Hate Waste*. Accessed September 2025.
²⁶ OzHarvest (2025). *Half-Eaten-Australian-Household-Food-Waste-Research-Report-2025.pdf*. Accessed October 2025..
²⁷ NSW EPA (2024). *Donate food: feed people, not landfill*. Accessed September 2025.
²⁸ Australian Government, DCCEEW (2025) *Reducing Australia's food waste*. Accessed October 2025.
²⁹ OzHarvest (2025). *Half-Eaten-Australian-Household-Food-Waste-Research-Report-2025.pdf*. Accessed October 2025.

Outcome 4: Greenhouse gas emissions from waste operations are decreasing.



Every scrap counts. Strong household participation in food and garden organics recycling helps reduce the city's greenhouse gas emissions from landfill

Opportunity for Lake Macquarie

When organic waste breaks down in landfill it produces methane, a potent greenhouse gas, that's 80 times stronger than carbon dioxide. Australia ranks thirteenth globally for methane emissions, with the waste sector responsible for about 11% of national emissions³⁰.

In NSW, waste-generated methane accounts for about 4% of total emissions³¹ while in Lake Macquarie, emissions from landfill operations represent about 82% of Council's operational greenhouse gas footprint.

This reflects a pattern seen across most local governments, where waste facilities are often the single largest source of direct greenhouse gas emissions within local government control. With 128 councils across NSW and 537 nationwide, the cumulative potential for climate action through improved waste management is significant. If every council works to reduce waste-related emissions by improving landfill gas capture, expanding organics recovery and transitioning to lower-emission residual waste treatment, the combined impact will accelerate Australia's progress toward reducing emissions.

Globally, one of the most established lower-emission alternatives to landfill is advanced moving-grate combustion, a proven form of waste-to-energy (WtE) technology that can cut emissions by one tonne of carbon dioxide equivalent emissions (CO₂e) for every tonne of household waste compared to landfill³².

As carbon-capture technologies advance, it is becoming increasingly possible to further reduce or even neutralise greenhouse gas emissions from residual waste treatment, an innovation now being demonstrated at leading global facilities.

³⁰International Energy Agency (2023), Methane Tracker Database, IEA, Paris. License: Creative Commons Attribution CC BY 4.0.

³¹NSW Government Net Zero Plan.

³²SWA – International Solid Waste Association (2022). White Book on Energy-from-Waste Technologies. Section 7.3 Impact of EfW on Climate Change (p61).

³³ARC CO₂ capture. Accessed July 2025.

From concept to practice - carbon-neutral residual waste treatment

Case study

Waste to energy with carbon capture - ARC - Copenhagen, Denmark

Amager Resource Centre (ARC) in Copenhagen is a leading example of integrating WtE and carbon capture in an urban setting. It processes 560,000 tonnes of residual waste annually, supplying electricity and district heating to 150,000 homes, while doubling as a recreation space with a ski slope and the world's tallest outdoor climbing gym.

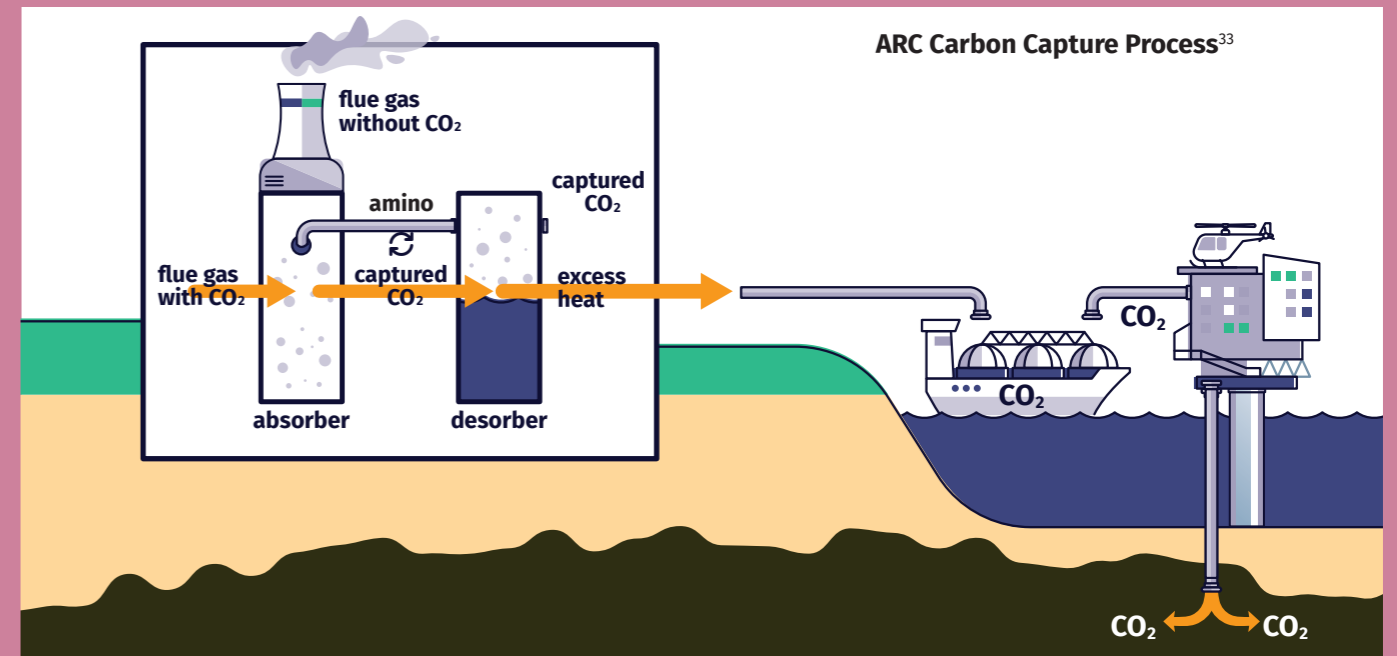
In 2024, ARC began trialling a system to capture up to 500,000 tonnes of CO₂ per year, aiming for carbon neutrality. Similar models across Europe and Asia combine energy recovery, biochar production, and CO₂ capture to offset emissions from residual waste.

Despite proven technology, carbon capture is costly and energy-intensive, reducing revenue from power sales. Captured CO₂ also needs secure storage or reuse, such as geological sequestration, use in greenhouses to grow plants, or conversion into green fuels. Projects like ARC show the potential of integrated strategies.

For Lake Macquarie and the Hunter Region, investing in low-emission WtE, landfill gas capture, and carbon management will be vital to reducing the climate impact of waste operations.



CopenHill, the Amager Resource Centre in Copenhagen, demonstrates global best practice in energy recovery from residual waste



Outcome 4: Greenhouse gas emissions from waste operations are decreasing.

How we'll get there - our strategies and priorities

4.1 Reduce operational emissions at our landfill

- 4.1.1 Optimise landfill gas capture, cell capping and emissions reduction systems at the Awaba Waste Management Facility
- 4.1.2 Strengthen long-term planning and governance to manage climate risks and methane emissions at the landfill, aligned with NSW Government and EPA climate change mitigation requirements

4.2 Increase food and organic waste recovery

- 4.2.1 Support the development of markets and processing pathways for recovered food and organic materials
- 4.2.2 Promote and enable initiatives that divert food and organic waste from landfill

4.3 Reduce emissions from waste transport and handling

- 4.3.1 Transition waste transport and handling operations toward lower-emission technologies and practices
- 4.3.2 Improve operational efficiency and partnerships, including leveraging grant opportunities, to reduce emissions across waste transport and handling systems

Outcome 5: Total waste to landfill is decreasing.

Opportunity for Lake Macquarie

Lake Macquarie is one of the region's strongest performers in resource recovery, diverting about 55% of residential waste from landfill each year, above the Hunter-Central Coast regional average of 47%³⁴.

However, as outlined in this strategy, further recovery will be challenging because most of the remaining waste consists of harder-to-recycle materials with limited current markets for end products. Broader national policy leadership is needed, following the lead of the European Union, to drive systemic change through standardised material inputs, product design for recovery and stronger producer responsibility at end of life.

At the local level, Council can continue helping residents achieve better recycling outcomes by improving communication and education initiatives. In 2024, kerbside recycling contamination in Lake Macquarie averaged 17%, slightly higher than the national 14% rate³⁵, highlighting the ongoing need to provide residents with clear and consistent recycling information.

While there is still room to improve recycling behaviours, current systems are approaching their maximum recovery potential. To reduce landfill volumes further, alternative treatment options are needed for residual wastes not feasible for recycling.

One option is energy recovery. Although new in Australia, waste-to-energy facilities are widely used across Europe, Japan and the United States to convert household's red bin waste into electricity or district heating. This approach captures the energy value of materials that can't be reused or recycled by processing them in advanced moving-grate combustion systems with strict emission controls. Air emissions are continuously monitored, publicly reported and regulated by government authorities.

These facilities can also strengthen local economies by supplying electricity and steam to nearby industries, supporting lower operating costs and encouraging the development of circular industrial precincts. However, these plants require large and steady volumes of waste to run efficiently. Their viability depends on regional collaboration, long-term waste supply arrangements and compatible industries located close enough to use the recovered energy.

From concept to practice - Western Australia collaboration in energy recovery

Case study

Modernising Perth's waste system through shared infrastructure and partnerships



Kwinana Energy Recovery Facility near Perth, WA

KWINANA ENERGY RECOVERY AND BOTTOM ASH PROCESSING PLANTS, WESTERN AUSTRALIA

Australia's first large-scale thermal waste-to-energy facility, the Kwinana Energy Recovery Project, processes up to 460,000 tonnes of residual waste, generating 38 MW of electricity, enough to power 50,000 homes. It created 3,500 construction jobs and now supports 50 permanent roles diverting non-recyclable waste from landfill³⁶.

Nearby, the Hope Valley Incinerator Bottom Ash Processing Plant recovers metals and transforms ash into engineered aggregates for civil construction. This reduces reliance on virgin materials and environmental impacts from mining. These aggregates meet strict safety standards and are used in road base, pipe bedding, and concrete products. Together, Kwinana and Hope Valley form a circular, low-emission production model that maximises resource recovery and minimises landfill dependence.

³⁴ NSW Government 2024. [NSW Local Government Waste Data Survey 2023-24 Results](#). Accessed October 2025.

³⁵ Australian Government, [DCCCEW \(2023\) National Waste Report Final \(1.2\) 2022](#), p74

³⁶ ACCIONA (2024). [ACCIONA Acquires Kwinana Waste-to-Energy Facility](#). Accessed October 2025.

³⁷ Waste Management Review (28 March 2025). [Blue Phoenix's aggregate gains](#). Accessed November 2025.

Outcome 5: Total waste to landfill is decreasing.

REGIONAL COLLABORATION - A SCALABLE MODEL FOR AUSTRALIAN COUNCILS

The success of these projects was made possible through long-term waste-supply agreements involving multiple local government and industry partnerships that:

-  ensure a consistent waste feedstock to underpin private-sector investment
-  spread financial risk and benefits across multiple jurisdictions and industries
-  enable infrastructure at a scale that is not feasible for councils acting alone
-  align regional planning, policy and procurement around shared waste outcomes and emissions-reduction objectives.

This collaborative model is relevant for our region, where no single council produces enough waste to support a facility of this scale. The Western Australian experience shows how shared governance, coordinated contracting and joint infrastructure planning can deliver solutions that individual councils can't achieve alone.



Bottom ash processed into aggregates to replace virgin materials in road base, pipe bedding and concrete

Outcome 6: We are prepared for our city's future waste management challenges.



Community Recycling Centres offer residents convenient and safe drop-off options for problem wastes that cannot be managed through kerbside services

Opportunity for Lake Macquarie

While Council has successfully reduced the amount of waste going to landfill, the total amount of waste produced per person remains relatively constant.

After we have recovered and recycled what we can, the residual waste is currently sent to landfill. It is unlikely that we will be able to reduce the amount of residual waste much further without significant reductions in overall waste generation, or new technologies that can increase recovery.

Our waste system must remain financially sustainable and responsive to community needs, so for the life of this strategy, landfill will continue to be the primary method for managing residual waste. At the same time, there is an opportunity to explore viable long-term alternatives that could improve how residual waste is managed in future.

As our climate changes, new waste challenges are arising. Severe weather events are becoming more frequent, with storms, floods and high-wind events capable of generating huge amounts of waste and demands on Council's resources and facilities. We need to be ready for these events by having strong contingency plans, the right infrastructure and good coordination with emergency partners so we can support our community quickly when it's needed most.

With new technologies come new waste challenges. Lithium-ion batteries, especially those embedded in electronic devices like phones, vapes, toys and scooters, are increasingly causing fires when incorrectly disposed. In 2024-2025, they triggered dozens of truck fires across the Hunter region, including 10 incidents in Lake Macquarie.

As these and other emerging problem wastes, such as PFAS, become more common, Council will need to monitor evolving risks and be ready to adapt to changing regulations and community expectations.

From concept to practice - Safer battery recovery

Case study

Recovering lithium-ion and embedded battery electronic waste in Lake Macquarie

The convenience of embedded and rechargeable lithium-ion batteries has led to their widespread use in everyday products. These batteries create increasingly complex e-waste streams and pose serious safety risks when disposed of incorrectly. Damaged or crushed lithium-ion cells can rupture and ignite into intense, self-sustaining fires that are extremely difficult to extinguish.

Council crews operate on the front line of this challenge, with staff and vehicles at risk when batteries end up in bulky waste and kerbside bins. To reduce these risks and expand safe disposal options, Council has increased community education on identifying embedded batteries, expanded accessible drop-off points and strengthened advocacy for clearer national product stewardship and safer disposal pathways.

As part of this work, Council now accepts loose lithium-ion batteries and products containing embedded batteries at both our Community Recycling Centres (CRCs). These facilities offer dedicated, free and safe drop-off points for residents, ensuring batteries stay out of kerbside bins and bulky waste collections, protecting our collection crews, trucks and waste facilities from preventable fires.

How we'll get there - our strategies and priorities

5.1 Advocate for improved resource recovery outcomes

- 5.1.1 Advocate for stronger State and Federal product stewardship schemes to improve recovery of problematic materials
- 5.1.2 Advocate for regulatory and policy settings that support energy recovery from residual waste as a preferred alternative to landfill

5.2 Engage with our community to promote better recycling practices

- 5.2.1 Improve recycling performance through targeted education, partnerships and clear guidance that reduces contamination and increases recovery

5.3 Maintain and improve resource recovery from Council-operated waste services

- 5.3.1 Deliver convenient and effective source-separated recycling services across kerbside, bulky waste and problem waste recovery streams
- 5.3.2 Increase recovery from bulky waste collections, including through partnerships with commercial recyclers and reuse organisations

Outcome 6: We are prepared for our city's future waste management challenges.

At the CRCs, accepted embedded battery items include:

-  phones, tablets, laptops and power banks
-  cordless appliances (vacuum cleaners, stick vacs, toothbrushes, shavers)
-  power tools and garden tools
-  smart watches, e-toys and mobility devices
-  e-bikes, e-scooters and accessories
-  vapes and other small rechargeable devices

Once collected, batteries are safely consolidated and transported to specialised recyclers who recover valuable metals such as lithium, nickel, copper and cobalt, diverting them from landfill and feeding back into new manufacturing supply chains.



Belmont North Community Recycling Centre

How we'll get there - our strategies and priorities

6.1 Develop long-term solutions for managing residual waste

- 6.1.1 Evaluate and progress viable long-term residual waste solutions, including regional partnerships and alternative processing technologies
- 6.1.2 Engage with regional stakeholders to assess opportunities, risks and policy settings relating to waste-to-energy, to inform Council's long-term approach to reducing landfill reliance

6.2 Ensure the long-term financial and operational sustainability of the Awaba Waste Management Facility

- 6.2.1 Deliver staged infrastructure and operational system upgrades that protect service reliability, regulatory compliance and financial sustainability
- 6.2.2 Explore long-term use options for the Awaba Waste Management Facility that maximise value for the community and Council operations

6.3 Plan for disasters and emergencies

- 6.3.1 Coordinate, through regional partnerships, to ensure waste infrastructure and services are prepared for disaster response and recovery
- 6.3.2 Maintain local capacity, contingency planning and community preparedness to manage high waste volumes during major emergency events

6.4 Monitor and respond to emerging and identified problem waste streams

- 6.4.1 Expand safe recovery pathways for emerging and problematic waste streams, supporting the effective implementation of product stewardship schemes
- 6.4.2 Engage with government and industry to increase customer access to recycling solutions for complex, high-volume, waste materials such as textiles, soft plastics, tyres and batteries

😊 Outcome 7: Waste services are reliable and affordable.



Strong community participation in kerbside services helps Lake Macquarie divert more than 50,000 tonnes of domestic waste from landfill each year

Opportunity for Lake Macquarie

Reliable and affordable waste services are essential to maintaining community trust and supporting cost-of-living stability in Lake Macquarie. Our focus is on delivering dependable services while continuing to improve efficiency so that costs remain well managed and service standards remain strong.

We are proud that three quarters of Lake Macquarie residents are satisfied with Council’s kerbside waste collection service³⁸. These strong results are achieved despite some outdated systems and manual processes that could be far more efficient.

Handling waste-related enquiries is one of Council’s highest-volume administrative functions, with more than 25,000 service requests processed a year to ensure households and businesses receive prompt, reliable support. We want to make it easier for customers to find the information they need, request services online and update their preferences through simple, user-friendly digital options.

The general condition of public open space was the highest-ranked priority for our community in Council’s most recent Liveability Census. Our 2024 Community Satisfaction Survey also showed a rise in the importance residents place on public garbage and recycling bins (from 4.3 in 2021 to 4.65 in 2024), but satisfaction with the service declined over the same period (from 3.70 to 3.51 on a scale of 1-5). This tells us that expectations are increasing and improvements are needed.

Litter and illegal dumping also remain persistent challenges, particularly from construction and renovation activity. Each year, Council responds to about 1,200 illegal dumping incidents involving roughly 3,000 tonnes of material. Investigations, clean-up orders and penalty notices result in about 140 enforcement actions annually. Council typically removes about 60% of dumped material, at a cost of approximately \$270,000 a year, with the remainder cleaned up by other landowners or the offenders themselves.

Volunteer programs continue to play a vital role in keeping our city clean. In 2025, more than 9,200 people participated in Eco Angel and Clean Up Australia Day activities, collecting more than six tonnes of litter including more than 100 dumped tyres. A priority of this strategy is to build on these efforts, trial innovative prevention measures and reduce the impact of dumping and littering across our city.

³⁸ Lake Macquarie City Council (2024). 2024 Community Satisfaction Survey. Internal report.

From concept to practice - tackling illegal dumping in Lake Macquarie

Case study

Reducing dumping through targeted deterrence

Illegal dumping creates environmental harm, public safety risks and unnecessary clean-up costs for the community. To address chronic dumping hotspots across the city, Council regularly undertakes targeted deterrence initiatives as part of its broader approach to managing illegal dumping. One recent example involved a suite of upgrades across four high-risk sites, delivered with funding support from the NSW Environment Protection Authority.

The program installed locked gates, 70 metres of bollard-and-cable fencing, surveillance systems and signage to restrict vehicle access, increase monitoring capability and discourage repeat dumping.

Across the four locations, 36 dumping incidents were reported before the upgrades. In the year following installation, only five incidents have been recorded, demonstrating the impact of strategic deterrence in reducing illegal dumping, protecting natural areas and freeing up resources for other community priorities.



Illegal dumping is investigated by Council’s compliance team to protect public land and hold offenders accountable

How we'll get there - our strategies and priorities

7.1 Contain costs to help deliver more affordable and dependable kerbside collection services

- 7.1.1 Improve system integrations that enhance operational safety, reduce administrative workload and improve customer experience through real-time insights and automation
- 7.1.2 Embed operational efficiencies that strengthen service performance and support cost containment

7.2 Improve and streamline our customer experience

- 7.2.1 Expand accessible and user-friendly digital services that improve customer access to waste information and services
- 7.2.2 Leverage technology to streamline internal workflows, enabling faster response times and clearer communication with customers

7.3 Manage Illegal dumping and public waste

- 7.3.1 Maintain and strategically upgrade public waste infrastructure to support cleanliness and improved amenity across the city
- 7.3.2 Implement targeted prevention and enforcement measures to reduce illegal dumping
- 7.3.3 Support community participation and education initiatives that prevent and respond to littering and illegal dumping, contributing to cleaner public spaces

Mesasuring progress

Waste and circular materials outcome	Measures
1. Circular economic activity is increasing	1A. Growth in the number of businesses participating in the circular economy, including those in reuse, repair, resale and recycling sectors within Lake Macquarie 1B. Increase in number of Council capital and operational projects incorporating circular products or practices 1C. Increase in number of circular economy initiatives connected to Lake Macquarie, including those supported, facilitated or promoted by Council, or led by local community or regional partners
2. Resources are conserved	2A. Decrease in the total amount of domestic waste generated per person per year 2B. Maintain number of activities supported or facilitated by Council that promote resource conservation and waste avoidance
3. Food waste is decreasing	3A. Reduction in average kilograms of food waste in red-lid bins per household per week 3B. Increase in the volume of edible food recovered through food rescue service activities within Lake Macquarie city
4. Greenhouse gas emissions from waste operations are decreasing	4A. Increase in landfill gas network, efficiency and electricity generation at the Awaba Waste Management Facility 4B. Maintain number of engagement initiatives and campaigns supported or facilitated by Council that promote the diversion of food and organic waste from landfill 4C. Reduction in greenhouse gas emissions from Council's waste management vehicle fleet

Waste and circular materials outcome	Measures
5. Total waste to landfill is decreasing	5A. Increase in the proportion of total waste received through Council-operated services that is diverted from landfill (overall resource recovery rate %) 5B. Decrease in the total amount of domestic waste landfilled per person per year 5C. Decrease in kerbside recycling contamination rate (%) 5D. Maintain number of product stewardship schemes that Council actively participates in, promotes, or facilitates access to for the community
6. We are prepared for our city's future waste management challenges	6A. Complete planned landfill cell, water management, and operating system upgrades at the Awaba Waste Management Facility 6B. Emergency Waste Management Plan in place and aligned with regional partners 6C. Number of regional collaboration initiatives actively progressed to deliver long-term residual waste solutions 6D. Increase in the number of difficult-to-recycle and targeted problem waste streams accepted through product stewardship and Council-facilitated programs
7. Waste services are reliable and affordable.	7A. Maintain high levels of resident satisfaction with Council's kerbside collection services 7B. Improve waste service charges to deliver the best value service compared with councils providing similar service offerings 7C. Maintain number of illegal dumping and litter clean-up initiatives undertaken or supported by Council each year 7D. Increase the number of public place bins upgraded and maintained

While the outcomes set the strategic direction, the priorities under each outcome guide action rather than prescribe specific projects, timelines or investment decisions. Actions will be developed, implemented and reported through Council's Delivery Program, annual Operational Plans and Business Plan processes, allowing responses to adapt to changing conditions, opportunities and community needs while maintaining accountability.

Measures are therefore designed to remain high-level and outcome-focused, providing meaningful indicators of progress while allowing flexibility in how actions are delivered under each priority. Progress will be measured against 2024–2025 baseline data to ensure performance can be tracked over time as the Strategy is implemented.

Thinking globally, acting locally

Lake Macquarie's Waste and Circular Materials Strategy is aligned with global, national and regional approaches to managing waste and promoting a circular economy.

Local alignment: Lake Macquarie City Council strategies

The strategy directly aligns with Council's existing governance frameworks like the Community Strategic Plan 2025-2035, Environmental Sustainability Strategy, and our Circular Economy and Sustainability Policies.

Detailed actions, informed by the Waste and Circular Materials Strategy will be embedded in Council's four-year Delivery Program, annual Operational Plan and Departmental Business Plans.



Regional alignment:

The Hunter and Central Coast Regional Circular Materials Strategy emphasises regional collaboration to support product stewardship programs, avoid and recover food waste and establish circular economy infrastructure.

Working with our regional partners will be important to deliver cost effective and environmentally responsible waste services for our community in the long term.



National and State alignment:

The policy landscape for circular management of resources is evolving quickly in Australia. The National Waste Policy and Action Plan guides policy for resource optimisation, recycling key waste streams and developing end markets for recycled products. Targets include reducing total waste generation, achieving an 80% average resource recovery rate by 2030 and phasing out problematic plastics.

Specific actions highlighted as the responsibility of local governments include:

- 2.13 Align community education efforts to reduce food waste, maximise impact and reduce confusion
- 2.15 Undertake research to better understand contributing factors of household contamination of kerbside recycling collection, to inform future interventions
- 6.3 Provide support to develop distributed infrastructure solutions to process organic waste, including composting infrastructure
- 6.4 Deliver Food Organics and Garden Organics collection to households and businesses.

The National Food Waste Strategy 2030 aims to halve food waste by 2030 through increased food rescue services and enhanced community education.

The NSW Waste and Sustainable Materials Strategy 2021-2041 sets ambitious targets in line with circular

economy principles. It focuses on responsible recovery of household problem wastes, increasing resource recovery rates, and reducing greenhouse gas emissions from waste management activities.

The NSW Net Zero Plan Stage 1: 2020-2030 targets a 35% emissions reduction by 2030 compared to 2005 levels on the journey to Net Zero by 2050. It promotes sustainable practices in businesses including resource recovery and circular economy principles.

The draft NSW Waste and Circular Infrastructure Plan reinforces the NSW Government's intention to strengthen the circular economy by scaling up reuse and repair through a dedicated strategy, reducing plastic waste under the NSW Plastics: The Way Forward action plan, and finalising reforms to the NSW waste levy to improve resource recovery incentives.

These National and NSW Government priorities directly align with our strategy's focus on waste avoidance, expanding reuse and repair, improving recovery of hard-to-recycle materials, and advocating for policy reform and infrastructure investment (such as waste to energy) to reduce reliance on landfill.

Global alignment:

The strategy supports the following United Nations Sustainable Development Goals:



Additional references

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Council-supported repair cafes provide a practical way for residents to repair everyday items and reduce waste, while building skills and community connections

