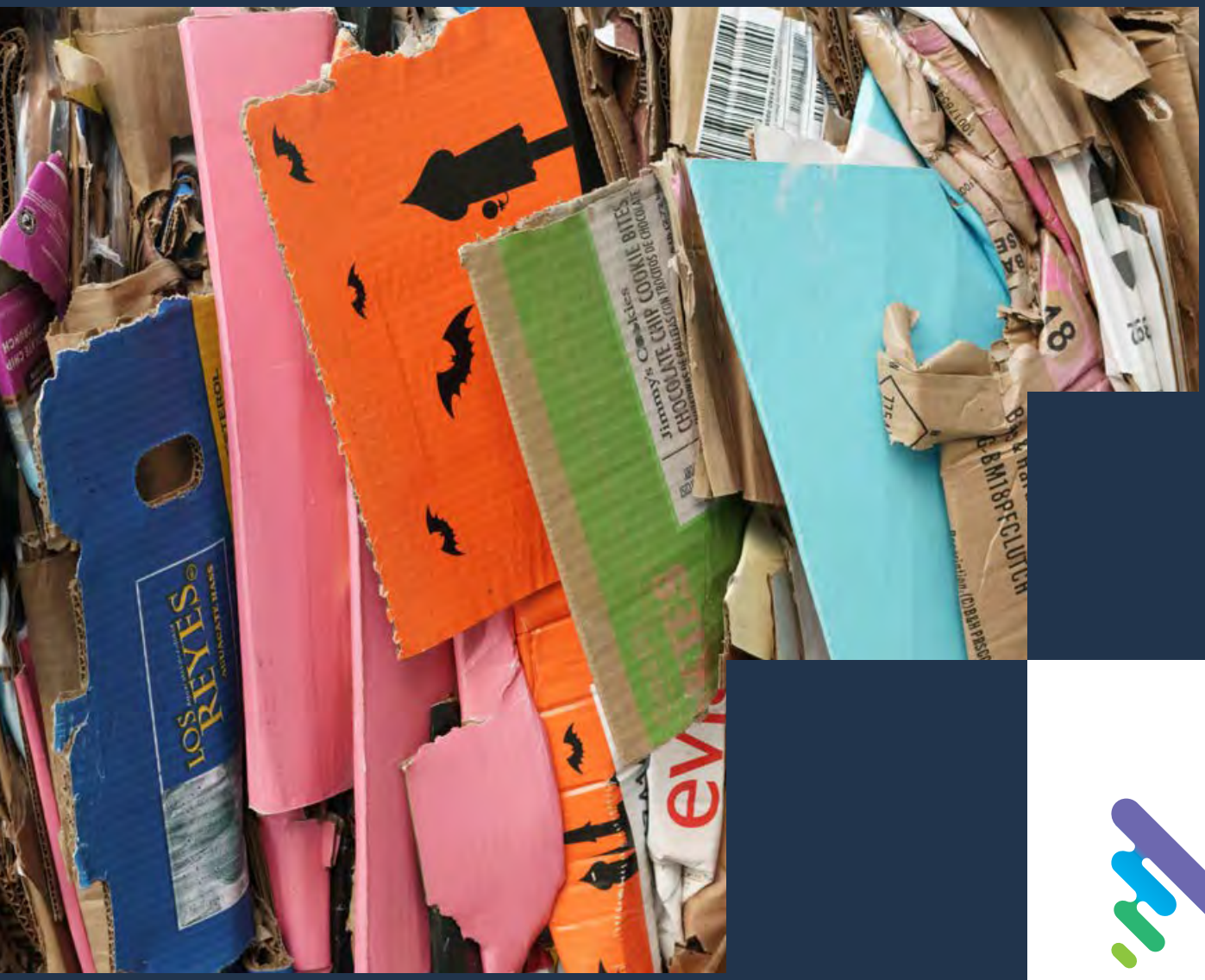
Our SUSTAINABLE WASTE Strategy

Strategic Framework



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newcastle.nsw.gov.au

City of Newcastle

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City of Newcastle

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Welcome

Acknowledgment of Country

‘Niirun Yalawa Awabakal and Worimi burrei’

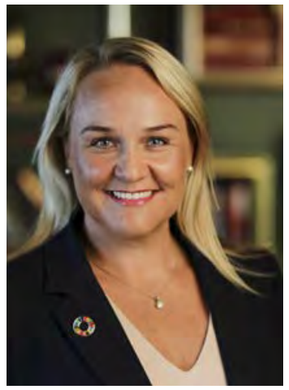
We all sit on Awabakal and Worimi land

The City of Newcastle 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. The City of Newcastle Acknowledges the custodianship of the Awabakal and Worimi peoples and the care and stewardship they have performed in this place since time immemorial.

‘Wunyibu wunyibu warra wunyibu wunyibu gkuuba Aboriginal burrei’

Always was, always will be Aboriginal land

Smoking ceremony held at the new City Administration Centre building at 12 Stewart Avenue. The ceremony also included; Wakakulang Dance Troupe, Aboriginal catering and a special guest talk by artist Saretta Fielding.



A message from our Lord Mayor

Newcastle is one of Australia's best places to live, work and enjoy pristine environments. Our coastal lifestyle, abundant green spaces and waterways, and proximity to world heritage listed national parks keep us connected to nature. And we benefit from the cultural energy, community spirit and opportunities that come with a liveable and modern city.

Our connection to nature may explain why 84% of Newcastle residents feel responsible for reducing the amount of waste sent to landfill, and 74% think reducing waste sent to landfill is extremely important.

Australia is at the dawn of a new era of waste management, one that's brimming with opportunities. We will supercharge the transformation of 'one person's trash into another person's treasure'. Our waste can drive new industries, create new jobs, and reduce the reliance on Australia's finite resources.

Together, we will make Newcastle a national leader in waste management and the circular economy. Our Sustainable Waste Strategy provides the road map for this journey, with Summerhill Waste Management Centre at its centre. It's the hidden gem in the Newcastle crown.

Our Sustainable Waste Strategy prioritises significant benefits to the planet and new jobs for our people that an invigorated Summerhill will generate. It also seeks to seize on the economic opportunities the circular economy will present Newcastle and the region.

Councillor Nuatali Nelmes
Lord Mayor of Newcastle

A message from our CEO

Our Sustainable Waste Strategy is one of Newcastle's most important strategic developments to ensure our future as a sustainable and global city.

For three decades, Newcastle has been the proud owner of the Summerhill Waste Management Centre, which is a rare asset to have so close to a major city. While many cities transport their waste to other regions, often hours away, Newcastle has continued to take responsibility for its waste and innovate its management right here in the city.

However right now we are at a crossroads in terms of the facility's next thirty years and how we continue to move forward while reducing our environmental footprint. Our Sustainable Waste Strategy responds to what our community wants to see. 99% of residents support City of Newcastle implementing new waste programs and the infrastructure required to achieve this.

As the world's economy becomes more circular and greener, Our Sustainable Waste Strategy will make Newcastle an environmental leader, showcasing what it means to live sustainably.

Summerhill Waste Management Centre will have the facilities needed to reduce what ends up in our red bins and what's diverted from landfill through our green and yellow bins. Recycled materials, like aluminium, will be used to create new products; food waste will become fertiliser to help grow more food; and the site will be powered by renewable energy generated onsite. Summerhill Waste Management Centre will sit at the centre of our city and region's circular economy.

Jeremy Bath
Chief Executive Officer

Our SUSTAINABLE WASTE Strategy

PLAN ON A PAGE

Our Vision: An innovative Resource Recovery hub, creating enduring value for customers, community, and the environment.

Our Mission: We will transition into a resource recovery hub by embracing best practices in waste and resource management globally to catalyse our local circular economy. We will invest in our people to develop our organisation's capability to collaboratively achieve our vision. We are a resource management business and we will stay in business by ensuring we have resources for our future.

City of Newcastle

	Planet		People		Prosperity		
PRIORITIES	Community	Environment	Safety	Culture	Customer	Operational Excellence	Financial Strength
INDICATORS: HOW WILL WE MEASURE SUCCESS?	• Community Survey Results YoY ↑ • Community Complaints YoY ↓	• Municipal Waste Diversion 80% • Carbon Neutrality YoY ↑ • Reportable Environmental Incidents YoY ↓	• Total Recordable Injury Frequency Rate YoY ↓ • Plant Compliance 100%	• Employee Survey Results YoY ↑ • Employee Turnover Rate YoY ↓	• Customer Survey Results YoY ↑ • Time on Site and Service Levels YoY ↑	• OEE Collections YoY ↑ • OEE SWMC YoY ↑	• Capital Program Delivery Against Long-Term Financial Plan 90% • Surplus to Waste Services Budget YoY ↑
OUTCOMES: WHAT WILL SUCCESS LOOK LIKE?	***Positive engagement with our community stakeholders***	***Planned and proactive environmental management***	***Safety is everyone's responsibility***	***Collective mindset for continual organisational improvement***	***Strong, respected and valued position in the market***	***Efficient services, processes in control and capable***	***Strong balance sheet with strong cash flows***
	1. Strong community support to ensure a social licence to operate and secure the future of waste at SWMC 2. Actively listening to our community to better inform design and delivery of services 3. Educated community that creates a measurable impact on municipal waste reduction and diversion 4. Interactions with all community stakeholders that are professional and positive	1. Improved resource recovery and diversion from landfill, to deliver best and highest value 2. Best practice environmental performance, achieving regulatory compliance 3. Reduced emissions and increased renewable energy generation and use in our operations	1. Safety first is a lived value by staff 2. Safe facilities and services provided to customers	1. We value people at the centre of our operation through a sense of value worth and support 2. Strong organisational capability; people, skills, role 3. Focussed and engaged teams providing visible leadership and common goal setting	1. The customer is central, and they are always treated positively and respectfully 2. We deliver highest standard of service levels to meet expectations 3. Actively listening to our customers to better inform design and delivery of services 4. Our services address emerging trends, are accessible and easy to use	1. High operational efficiency; work smarter not harder 2. Systems, practices and resources in place to realise business success and continuous improvement 3. Best practice data management framework and governance 4. Plan for operational excellence and follow the Plan Do Check Act (PDCA) cycle	1. Intergenerational equity through responsible fiscal management 2. A business strategy to guide our focus, to deliver excellence and future proof our business 3. Continually improving profitability, creating financial security and competitive advantage
OBJECTIVES: HOW WILL WE ACHIEVE SUCCESS?	1. Regularly engage with our stakeholders so that they are listened to and participate 2. Lead a long-term Behaviour Change Program to improve the diversion of waste from Landfill 3. Regularly measure our community's impact and identify opportunities for improvement	1. Mitigate environmental impacts from managing all material streams received 2. Create and develop long-term local resource recovery options 3. Power future SWMC infrastructure and operations through renewable energy 4. Collaborate with other Hunter Councils, State and Federal Governments, industry experts, and universities to explore and promote circular innovation	1. Ensure a robust safety management system is in place 2. Embed a Behavioural Safety Program to create an environment where safer choices become second nature	1. Building trust with our people by understanding their concerns and commitments and providing regular constructive feedback 2. Continuously develop our leaders and teams to effectively utilise improvement systems, processes, and tools	1. Ensure our site and services can be effectively utilised by our customers 2. Digitise customer services to enhance and improve self-service capabilities 3. Embed a customer-led culture through continual feedback and planning	1. Reliable and efficient operations by removing variation from our processes, making them absolutely predictable for our people and our customers 2. Strong data governance and intelligent business reporting using data management systems 3. Embed a business system where culture, systems, processes, and infrastructure align to deliver continuous improvement and excellence	1. The SWMC asset and operations will be protected to ensure we have a multigenerational benefit for our community and customers through judicious planning and preservation 2. Partnerships, delivery models and funding opportunities will be explored and delivered based on greatest benefit for our community and customers
CHALLENGES: CHALLENGES TURNED INTO OPPORTUNITIES	• Understanding customer expectations to deliver excellent customer service (Challenge 6) • Engaging all residents and customers to change behaviours (Challenge 7)	• Security around processing recyclable (yellow-lid) and organic (green-lid) materials locally (Challenge 1) • Meeting ambitious waste and recycling targets (Challenge 4) • Managing our high-risk operation proactively, rather than reactively (Challenge 8) • Realising the potential of renewable energy generation and usage (Challenge 10)	• Managing our high-risk operation proactively, rather than reactively (Challenge 8)	• Managing our high-risk operation proactively, rather than reactively (Challenge 8)	• Understanding customer expectations to deliver excellent customer service (Challenge 6) • Optimising our systems and processes to maximise value for our customers (Challenge 11)	• Managing our high-risk operation proactively, rather than reactively (Challenge 8) • Optimising our systems and processes to maximise value for our customers (Challenge 11)	• Developing resilient local end-markets (Challenge 2) • Funding our future (Challenge 3) • Strategic direction and long-term planning (Challenge 5) • Fostering regional collaboration to create impacts at scale (Challenge 9)

LEGEND
YoY: Year on Year
SWMC: Summerhill Waste Management Centre
↑ Improvement ↓ Reduction

Our Core Principles

In forming Our Sustainable Waste Strategy, we were guided by two core principles that we believe best capture what our community has told us they want, what our regional needs are now and into the future, and what the waste and recycling market and policy framework are driving towards for the City of Newcastle (CN).

Waste Hierarchy

The waste hierarchy sets out the priorities for the most efficient and most sustainable use of resources, establishing the framework under which all waste decisions should be made and all waste managed.

The waste hierarchy prioritises waste avoidance and reduction as the most preferable option for waste management, then addresses the different options for managing waste that can't be avoided, in order of best environmental value, with disposal to landfill as the least preferable option. In considering the priorities in the waste hierarchy, efficiency and sustainability of the chosen options must also be considered.

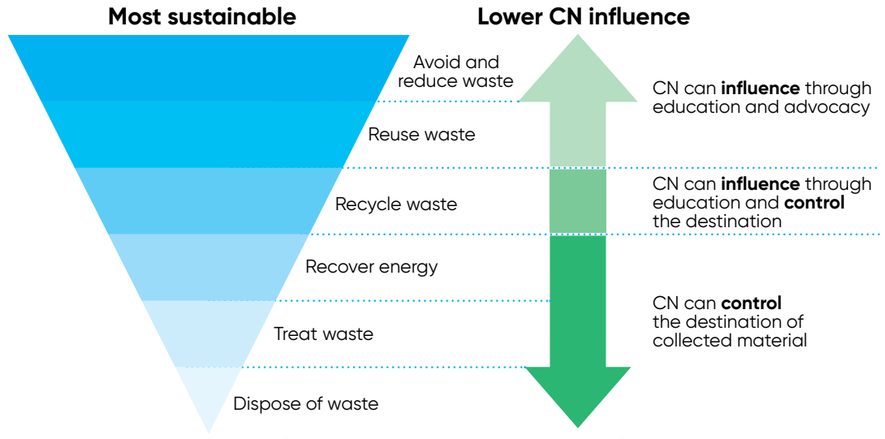
While waste avoidance is most preferable, it is also the aspect over which local government has the least influence. Local governments typically have more control over the lower portion of the waste hierarchy as they have a responsibility to provide waste collection, processing and disposal services for municipal waste and can influence the final destination of the material they collect.

Mechanisms for change are important to consider when developing actions for a strategy. The following table describes what is in CN's sphere of control to manage change.

Table 1: City of Newcastle Waste Services sphere of control

Control **CN can *directly* impact**	Influence **CN can *indirectly* impact**	Concern **Impacts CN but is beyond CN's ability to effect change**
• Materials recovery rate and diversion of waste from landfill through physical infrastructure such as sorting and reprocessing • Management of services – collection frequency, bin systems and fees • Management of commercial waste through CN collections and material received at CN's facility • Procurement of goods and services including requirement for goods to contain recyclable content	• Behaviour change through education and communication • Advocacy for waste diversion • Incidence of illegal dumping through the implementation of penalties and education campaigns • Participation rate in the use of services and programs	• Global market shifts • State Government waste levy • Other council decisions on waste management • Product design • Product purchase/ consumption

Figure 1: Waste Hierarchy



Circular Economy

In Australia, and across the globe, we are using resources at an ever-increasing and unsustainable rate.

We are using the resources that future generations will rely on, and without a shift in the way we consume, use and manage resources, future generations will struggle to meet their needs.

A circular economy helps answer the challenge of meeting our own needs without compromising future generations' ability to meet their needs.

Looking beyond the current take-make-waste extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste and pollution out of the system.

Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles: design out waste and pollution; keep products and materials in use (ideally at their highest and best value); and regenerate natural systems.

Blue Environment (2021) Australian standard for waste and resource recovery data and reporting https://www.awe.gov.au/sites/default/files/documents/standard-wrr-data-and-reporting-final-issued-v2.pdf

We are currently in a state of transition from a linear economy to a circular economy

CN has adopted the NSW Government's principles of a circular economy[1] for the development of our Strategy:

1. Sustainable management of resources
2. Valuing resource productivity
3. Design out waste and pollution
4. Maintain the value of products and materials
5. Innovate new solutions for resource efficiency
6. Create new circular economy jobs
7. Foster behaviour change through education and engagement

[1] NSW Government (2019) NSW Circular Economy Policy Statement

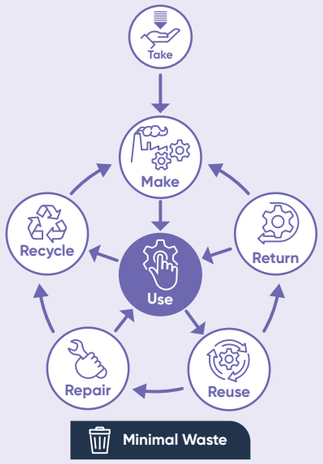
Figure 2: From linear economy to circular economy

Linear Economy

- Traditional model
- Economy is dependent upon abundant inputs of finite raw materials
- Natural resource intensive – using up our future generations resources
- High level of waste
- Unsustainable

Recycling Economy

- Commenced in response to increasing waste generation and recognition that many resources are finite and even renewable ones were being consumed faster than they can be replaced
- Reduces economic dependence upon inputs of finite raw materials
- Reduces reliance on virgin materials for new products
- Recognises materials as a resource to be used again and again
- Reduces waste requiring disposal
- Reduces energy and water requirements to manufacture most new items



Circular Economy

- Decouples reliance on virgin materials for both manufacturing and economic growth
- Maintains the value of materials by keeping them in the productive economy for as long as possible
- Reduces the amount of virgin materials required for products
- Significantly reduces the amount of waste, greenhouse gas emissions and pollution created.
- Reduces energy use in manufacturing
- Reduces consumption of potable water for manufacturing of new products
- Increases opportunities for job creation[2], economic growth[3] and innovation

[2] The recycling sector in Australia currently generates 9.2 jobs per 10,000 tonnes of waste compared to only 2.8 jobs for the same amount of waste sent to landfill (Access Economics, 2009)

[3] KPMG, 2020, Potential economic pay-off of a circular economy for Australia, https://assets.kpmg/content/dam/kpmg/au/pdf/2020/potential-economic-pay-off-circular-economy-australia-2020.pdf

Our Opportunity

The White Paper (Appendix 1) provides an overview of:

1. Market drivers,
2. Policy drivers,
3. City of Newcastle and Hunter Region needs, and
4. Current service capabilities for waste and resource management.

This document raises numerous challenges and opportunities across each area.

City of Newcastle has prioritised 11 key challenges[4] that will be transformed into opportunities.

Each challenge has been linked with a Priority of the Strategy.

Challenge 1
Security around processing recyclable (yellow-lid) and organic (green-lid) materials locally

Challenge 2
Developing resilient local end-markets

Challenge 3
Funding our future

Challenge 4
Meeting ambitious waste and recycling targets

Challenge 5
Strategic direction and long-term planning

Challenge 6
Understanding customer expectations to deliver excellent customer service

Challenge 7
Engaging all residents and customers to change behaviours

Challenge 8
Managing our high-risk operation proactively, rather than reactively

Challenge 9
Fostering regional collaboration to create impacts at scale

Challenge 10
Realising the potential of renewable energy generation and usage

Challenge 11
Optimising our systems and processes to maximise value for our customers

[4] Our Sustainable Waste Strategy: White Paper - Appendix 1: Summary of Key Challenges and Opportunities

City of Newcastle has summarised the current position of Waste Services through a SWOT[5] matrix.

The matrix will enable prioritisation of the actions within our Sustainable Waste Strategy and directly at Summerhill Waste Management Centre (SWMC) to respond to these elements and considers:

- How can we take advantage of our strengths?
- How can we moderate the impact of our weaknesses and ultimately resolve them?
- How can we capitalise on the opportunities?
- How can we address the threats?

Strengths	Weaknesses	Opportunities	Threats
Landfill capacity Landfill asset has almost 100 years of capacity at current throughput	**Historical business model** Business model historically focused on disposal rather than recovery	**Build long-term financial strength to future proof Waste Services** Transition SWMC into a financially stable business, creating long-term financial security for Waste Services and CN	**Urban encroachment** Future urban encroachment on SWMC may constrain further development of the site
Development potential SWMC site potential for development of additional infrastructure	**Lack of strategic direction** Historical lack of strategic direction for development and operation of site and CN waste operations	**Develop new business models** Develop new business models to generate value beyond landfill revenue at SWMC. Leveraging its competitive advantage through growth and diversification	**Competition** Competition from potential new facilities, including the introduction of Energy from Waste. This may divert revenue away from SWMC and block future opportunities
Strategic location SWMC site is at an excellent strategic location for the region in close proximity to the M1 and Hunter Express Way	**Poor data** Poor waste data and operations data management is a barrier to identifying opportunities for future improvements	**Opportunity to provide localised resilience** Limited processing infrastructure in region provides opportunity to build local infrastructure to provide long term regional resilience and reduce dependency on Central Coast and Sydney	**Highly regulated industry** Waste Services is governed by acts and regulations. Failure to comply places people, the environment, and the operation of the business at risk
Renewable energy SWMC site generates 7MW of renewable energy which can power future infrastructure behind-the-meter	**Council resource limitations** SWMC operational efficiency and development opportunities limited by Council budgets and resources	**Circular economy opportunities** Circular economy opportunities and colocation of facilities at SWMC	**End-markets for processed recyclables** Limited end-markets for processed recyclables and compost in region. Resilient, localised supply chains are a priority
Community support Community support for improving waste diversion and better waste management practices	**Poor recycling performance** High contamination and low capture of recyclables in kerbside yellow recycling bins. Low recovery of commercial waste (C&I and C&D). High State/ Federal targets of 80%	**Integrated systems** Development of integrated efficient and automated systems and processes in the operation of SWMC	**Climate change** Increased frequency and intensity of extreme weather events impacts waste generated after natural disasters and operations of SWMC
	Understanding customer expectations Limited customer service levels defined and measured. Limited ongoing engagement to understand customer expectations to achieve excellent customer service	**State and federal funding** State and federal funding to support capital investment of infrastructure	**Sole dependency risks** Limited processing infrastructure in region pose sole dependency risks

[5] Strength, Weakness, Opportunity, and Threat Matrix

Our Strategy

Key Documents

1 WHITE PAPER
Current state

Sets out our current **challenges** and potential **opportunities**

2 STRATEGIC FRAMEWORK
Future state
20yr review

A framework to operate our Business Unit, including outcomes and success measures.

Setting long-term **objectives** to realise our **opportunities**

THIS DOCUMENT

3 DELIVERY PLAN
The roadmap
4yr review

Fully costed and resourced **actions aligned to our key objectives** in our Strategic Framework

This strategic framework is underpinned by the City's Waste and Resource Recovery Policy which describes the following commitment:

- CN is intent on being a considerate user of the limited resources we have on our planet. We are committed to empowering our organisation and community to view their 'waste' differently - as resources and materials that can have another life outside of a landfill.
- The more materials recirculated in the economy the greater their value. This will produce greater prosperity for our people and our planet. All materials have an embedded value which can be either put to good use and back in the economy via reuse, recycling or recovery, or, be disposed of forever.

To deliver this commitment, the City of Newcastle has developed Our Sustainable Waste Strategy which consists of a:

Strategic Framework (This Document)

- Provides a functional framework integrated with our Waste and Resource Recovery operations.
- Describes the key outcomes we would like to achieve over 20 years and long-term objectives that will help us get there.

White Paper (Appendix 1)

- Provides a current state view of the waste and resource recovery industry, highlights key policy targets, our regional requirements and our City's current capability.
- Highlights challenges and opportunities for the City's Waste and Resource Recovery operations.

Delivery Plan (Appendix 2)

- Demonstrates the actions required to deliver the Strategy.
- Reviewed and updated every 4 years.

Our SUSTAINABLE WASTE Strategy

Our Vision

In 2042, Summerhill Waste Management Centre will be:

An innovative resource recovery hub, creating enduring value and pride for its' community and customers, and the environment

Our Mission

We will invest in global best practices in waste and resource management to catalyse our local circular economy and protect our planet.

We will invest and develop our people to collaboratively achieve our vision.

We are a resource management business, and we will stay in business by ensuring we have resources for our future.

Our Pillars and Priorities

Our Pillars form the foundation of the Strategy and our Waste Services operations. Value has resonated through our Vision into each pillar as our organisational commitments:

Pillar 1

PLANET

We value our community, protecting the earth and its finite resources

Pillar 2

PEOPLE

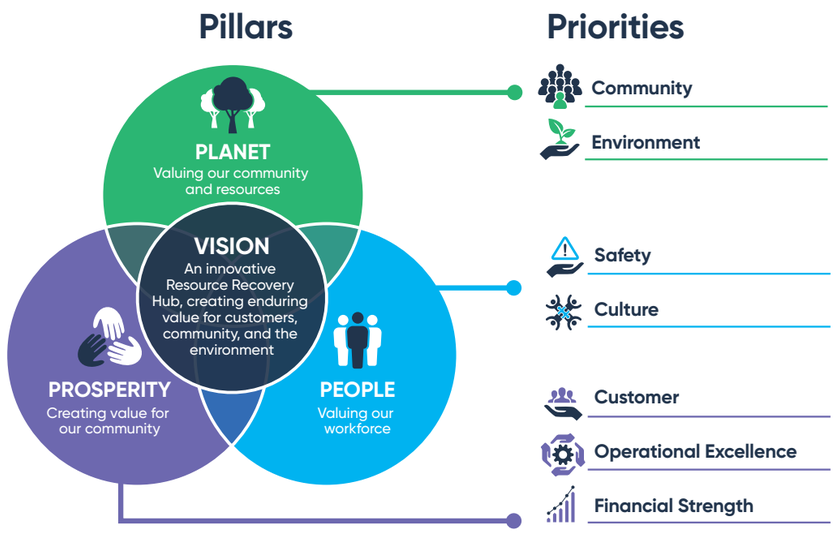
We value our workforce to keep them safe, see them grow and create new opportunities

Pillar 3

PROSPERITY

We will create enduring value for our community through our operations

Our Priorities demonstrate how the organisation will operationalise these Pillars with specific objectives, outcomes and success measures linked to each Priority.



City of Newcastle

Pillar 1

Planet

Our commitment

Valuing Our Community and Resources

Everyone has a role to play. Engaging everyone in our community in responsible management of waste means our community and planet stay healthy. It is everyone's responsibility and opportunity to help reduce the materials sent to landfill.

The planet we live on has a limited amount of raw materials and limited options to recycle the wastes that we create. Being careful with our planet's resources and looking after their value can maintain the planet's ability to support us in the future.

Keeping materials in our economy, rather than in landfill, will benefit our region. At our Summerhill Waste Management Centre (SWMC), we can provide services to the region at a scale which lets us use advanced resource recovery processes. This means the resources keep their value and leads to better environmental outcomes.

Lowering our carbon emissions and polluting less are key to looking after our planet. The best way to manage our waste, is having more reuse, recycling, composting and energy generation and less landfill.

Priority 1
Community

Priority		An educated community who improves waste reduction and diversion by building an understanding and knowledge of the value of the materials they throw away.
Outcomes	**What will success look like?**	***Positive engagement with our community stakeholders***
		• Strong community support to ensure a social licence to operate and secure the future of waste at SWMC • Actively listening to our community to better inform design and delivery of services • Educated community that creates a measurable and favourable impact on municipal waste reduction and diversion • Interactions with all community stakeholders that are professional and positive
Objectives	**How will we achieve success?**	1. Regularly engage with our stakeholders so that they are listened to and participate 2. Lead a long-term Behaviour Change Program to improve the diversion of waste from landfill 3. Regularly measure our community's impact and identify opportunities for improvement
Indicators	**How will we measure success?**	• Community Survey Results — Year on Year Improvement • Community Complaints — Year on Year Reduction
Challenges (p16)	**Challenges turned into Opportunities**	• Understanding customer expectations to deliver excellent customer service (Challenge 6) • Engaging all residents and customers to change behaviours (Challenge 7)
Strategic/ Regulatory Links		**City of Newcastle** • CSP 1.2 Connected and fair communities • CSP 2.1 Action on climate change • CSP 2.3 Circular economy • CSP 3.2 Opportunities in jobs, learning and innovation • CSP 4.2 Trust and transparency **State** • NSW Waste and Sustainable Materials Strategy 2041 **National** • National Waste Policy and Action Plan

Priority 2
Environment

Priority		Zero harm to the environment by reducing pollution, taking a regenerative approach, and treating materials as resources.
Outcomes	**What will success look like?**	***Planned and proactive environmental management*** • Improved resource recovery and diversion from landfill, to deliver best and highest value • Best practice environmental performance, achieving regulatory compliance • Reduced emissions and increased renewable energy generation and use in our operations
Objectives	**How will we achieve success?**	1. Mitigate environmental impacts from managing all material streams received 2. Create and develop long-term local resource recovery options 3. Power future SWMC infrastructure and operations through renewable energy 4. Collaborate with other Hunter Councils, State and Federal Governments, industry experts, and universities to explore and promote circular innovation
Indicators	**How will we measure success?**	• Municipal Waste Diversion — 80% • Carbon neutrality[6] — Year on Year Improvement • Reportable environmental incidents — Year on Year Reduction
Challenges (p16)	**Challenges turned into Opportunities**	• Security around processing recyclable (yellow-lid) and organic (green-lid) materials locally (Challenge 1) • Meeting ambitious waste and recycling targets (Challenge 4) • Managing our high-risk operation proactively, rather than reactively (Challenge 8) • Realising the potential of renewable energy generation and usage (Challenge 10)
Strategic/ Regulatory Links		**City of Newcastle** • CSP 2.1 Action on climate change • CSP 2.3 Circular economy • Environment 1.1 Towards net zero emissions • Environment 3.1 Design out waste **State** • NSW Waste and Sustainable Materials Strategy 2041 • Net Zero Plan **National** • National Waste Policy and Action Plan • National Food Waste Strategy **Regulations** • *POEO Act 1997 (NSW)* • POEO (General) Regulation 2009/(Waste) Regulation 2014 • *Waste Avoidance and Resource Recovery Act 2001*

[6] Any CO2 released into the atmosphere from our activities is balanced by an equivalent amount being removed

Pillar 2

People

Our commitment

Valuing Our Workforce

The waste and resource management services we provide creates local jobs and helps promote prosperity in the region. Everyone's waste materials are valuable to someone else which in turn creates a chain of value.

We want to support our community in their role in making these value chains happen as well as strengthening the local and region economies.

Waste collections are an essential service and help to protect our environment for future generations.

We have a duty of care to keep everyone safe. We want our staff to feel fulfilled and work to constantly improve the services we offer.

Priority 3
Safety

Priority		Providing a safe work environment for our people, customers, and community with a positive culture of proactive improvement moving towards zero injuries.
Outcomes	**What will success look like?**	***Safety is everyone's responsibility***
		• Safety first is a lived value by staff • Safe facilities and services provided to customers
Objectives	**How will we achieve success?**	1. Ensure a robust safety management system is in place 2. Embed a Behavioural Safety Program to create an environment where safer choices become second nature
Indicators	**How will we measure success?**	• Total Recordable Injury Frequency Rate — Year on Year Reduction • Plant Compliance — 100%
Challenges (p16)	**Challenges turned into Opportunities**	• Managing our high-risk operation proactively, rather than reactively (Challenge 8)
Strategic/ Regulatory Links		**City of Newcastle** • Safe City Plan **Regulations** • *Work Health and Safety Act 2011 and Work Health and Safety Regulation 2017* • *Heavy Vehicle (Adoption of National Law) Act 2013 (NSW)*

Priority 4
Culture

Priority		A people first approach by fostering a capable, engaged, and positive workforce culture.
Outcomes	**What will success look like?**	***Collective mindset for continual organisational improvement*** • We value people at the centre of our operation through a sense of value worth and support • Strong organisational capability; resourcing, skills, and role • Focussed and engaged teams providing visible leadership and common goal setting
Objectives	**How will we achieve success?**	1. Build trust with our people by understanding their concerns and commitments and providing regular constructive feedback 2. Continuously develop our leaders and teams to effectively utilise improvement systems, processes, and tools
Indicators	**How will we measure success?**	• Employee Survey Results — Year on Year Improvement • Employee Turnover Rate — Year on Year Reduction
Challenges (p16)	**Challenges turned into Opportunities**	• Managing our high-risk operation proactively, rather than reactively (Challenge 8)
Strategic/ Regulatory Links		**City of Newcastle** • CSP 3.2 Opportunities in jobs, learning and innovation • CSP 4.1.3 Aligned and engaged workforce • CSP 4.3.1 Collaborative organisation • Workforce Development Strategic Plan • EEO Management Plan **Regulations** • *Anti-Discrimination Act 1977*

Pillar 3

Prosperity

Our commitment

Creating Value for our Community

All materials have an embedded value which can be put to good use back in the regional economy. Correct sorting of materials by our community, along with efficient management will maximise their value. Materials can either be reused right away, recycled into similar or different products, composted to enrich soils, or turned into energy to power our operations. Reusing a material creates better value than recycling or recovering it.

We are committed to creating more options to recover our precious resources. This will benefit our region, creating new value chains and local jobs. Our SWMC is key to reaching this goal and to do this a commitment will be made to continually improve our operations, invest our money wisely in key infrastructure and assets, and improve our data, planning and systems. Our community can help us by sorting their waste well. The revenue we generate through our services will be reinvested into projects which support our planet, and our people.

Our SWMC already serves a large range of customers but providing more reliable options for our customers to recover resources will bring more prosperity. Continuous long-term improvements will also deliver highly satisfied customers and repeat business.

Priority 5
Customer

Priority		Create high customer satisfaction by delivering service levels that meet customer expectations through accessible communication and digital channels.
Outcomes	**What will success look like?**	***Strong, respected and valued position in the market***
		• The customer is central, and they are always treated positively and respectfully • We deliver highest standard of service levels to meet expectations • Actively listening to our customers to better inform design and delivery of services • Our services address emerging trends, are accessible and easy to use
Objectives	**How will we achieve success?**	1. Ensure our site and services can be effectively utilised by our customers 2. Digitise customer services to enhance and improve self-service capabilities 3. Embed a customer-led culture through continual feedback and planning
Indicators	**How will we measure success?**	• Customer Survey Result — Year on Year Improvement • Time on site and service levels — Year on Year Improvement
Challenges (p16)	**Challenges turned into Opportunities**	• Understanding customer expectations to deliver excellent customer service (Challenge 6) • Optimising our systems and processes to maximise value for our customers (Challenge 11)
Strategic/ Regulatory Links		**City of Newcastle** • CSP 4.2 Trust and transparency • Customer Experience Strategy **Regulations** • *Local Government Act 1993 (NSW)*

Priority 6
Operational Excellence

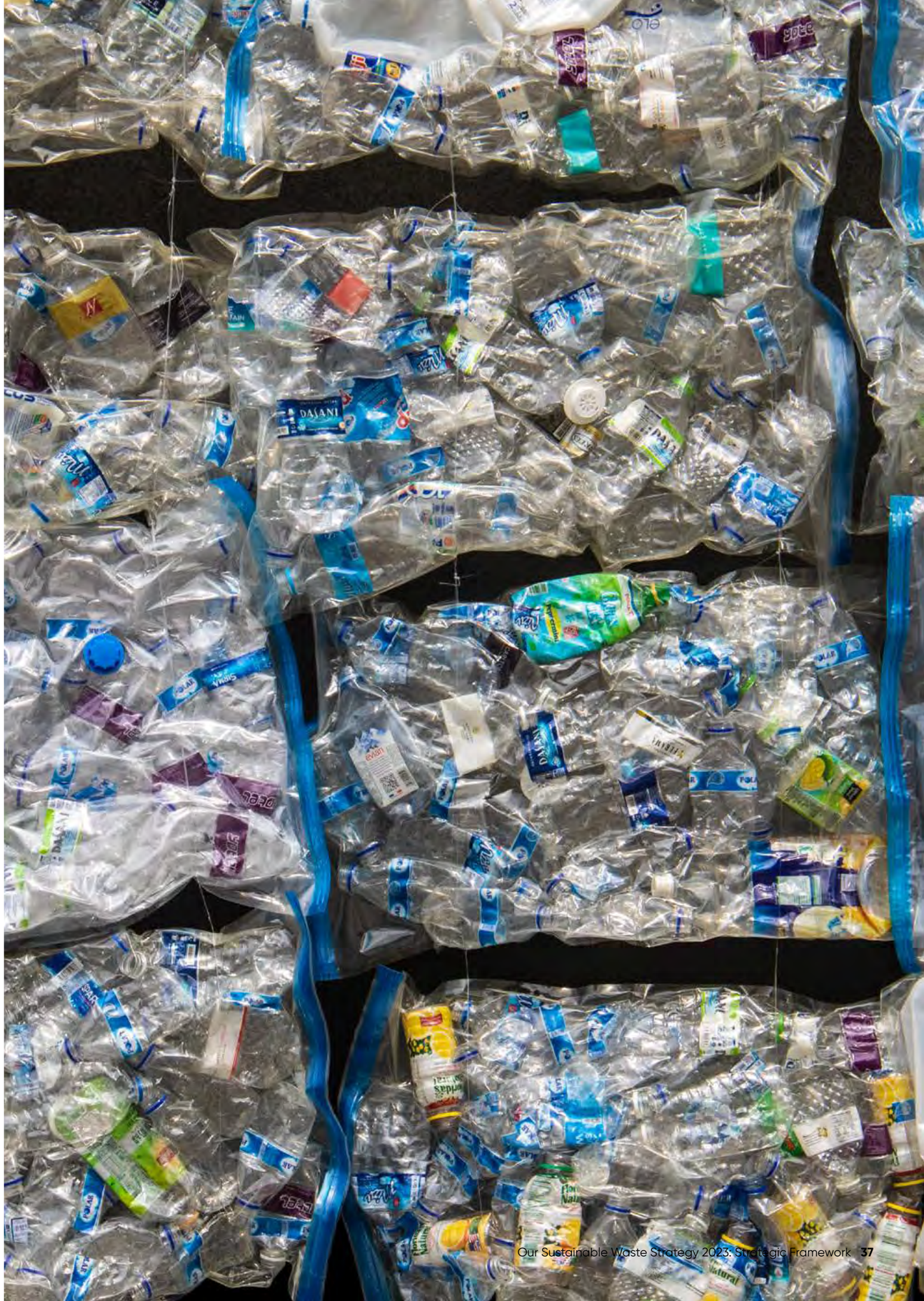
Priority		Delivering our high-quality services to our customers through continual improvement of systems and processes.
Outcomes	**What will success look like?**	***Efficient services, processes in control and capable***
		• High operational efficiency; work smarter not harder • Systems, practices and resources are in place to realise business success and continuous improvement • Best practice data management framework and governance • Plan for operational excellence and follow the Plan Do Check Act (PDCA) cycle
Objectives	**How will we achieve success?**	1. Reliable and efficient operations by removing variation from our processes, making them absolutely predictable for our people and our customers 2. Strong data governance and intelligent business reporting using data management systems. 3. Embed a business system where culture, systems, processes, and infrastructure align to deliver continuous improvement and excellence.
Indicators	**How will we measure success?**	• Overall Equipment Effectiveness (OEE)[7] — Year on Year Improvement • OEE-SWMC — Year on Year Improvement
Challenges (p16)	**Challenges turned into Opportunities**	• Managing our high-risk operation proactively, rather than reactively (Challenge 8) • Optimising our systems and processes to maximise value for our customers (Challenge 11)
Strategic/ Regulatory Links		**City of Newcastle** • CSP 4.3.2 Innovation and continuous improvement • CSP 4.3.2 Data-driven decision-making and insights

[7] Overall Equipment Effectiveness = Availability x Performance x Quality. This is a best practice metric used to identify the percentage of operational time that is truly productive. A total score of 100% would mean 100% availability (no unplanned stop time), 100% performance (as efficient as possible), and 100% quality (no deviation from the quality required).

Priority 7

Financial Strength

Priority		Ensure the future of SWMC as a sustainable business through long-term financial planning, responsible decision-making and responsible investment.
Outcomes	**What will success look like?**	***Strong balance sheet with strong cash flows*** • Intergenerational equity through responsible fiscal management • A business strategy to guide our focus, to deliver excellence and future proof our business • Continually improving profitability, creating financial security and competitive advantage
Objectives	**How will we achieve success?**	1. The SWMC asset and operations will be protected to ensure we have a multigenerational benefit for our community and customers through judicious planning and preservation 2. Partnerships, delivery models and funding opportunities will be explored and delivered based on greatest benefit for our community and customers
Indicators	**How will we measure success?**	• Capital program delivery against long-term financial plan 90% • Surplus to Waste Services Budget Year on Year Improvement
Challenges (p16)	**Challenges turned into Opportunities**	• Developing resilient local end-markets (Challenge 2) • Funding our future (Challenge 3) • Strategic direction and long-term planning (Challenge 5) • Fostering regional collaboration to create impacts at scale (Challenge 9)
Strategic/ Regulatory Links		**City of Newcastle** • CSP 4.1.1 Financial sustainability • CSP 4.1.2 Integrated planning and reporting • CSP 3.4 City-shaping partnerships • Economic: 3.1 Strategic Planning and Development: Strategic land use planning to support sustainable growth • Economic: 3.5 Circular economy: Developing Summerhill as an Innovation Precinct **Regulations** • *Local Government Act 1993 (NSW)*



Delivering Our Strategy

Our Sustainable Waste Strategy provides a 20 Year framework for achieving our Vision to transform our operations into an innovative resource recovery hub, creating enduring value for customers, community, and the environment.

A fully costed and resourced Delivery Plan (Appendix 2) will be developed every 4 Years with 5 Delivery Plan cycles being implemented over the life of the Strategy.

Review Period	Document				
20 Years	Our SUSTAINABLE WASTE Strategy				
4 Years	**Delivery Plan** Cycle 1	**Delivery Plan** Cycle 2	**Delivery Plan** Cycle 3	**Delivery Plan** Cycle 4	**Delivery Plan** Cycle 5

Cycle Breakthrough Goals

Each cycle, breakthrough goals will be defined and aligned with the Strategy success measures to demonstrate incremental achievement (i.e. The Strategy has set a target of 80% Municipal Diversion.)

The Delivery Plan in Cycle 1 will set a breakthrough goal of 60% with future Cycles having higher targets for achievement. Deliverables will be developed to achieve one or more objectives in the Strategy.

Implementation

The Strategy will be implemented by all staff (from managers through to front-line staff). Ensuring all our people are aligned with the vision and strategic objectives will be critical to achieving success.

Waste Services will create alignment and focus by utilising lean management techniques to cascade annual organisational objectives, within year monitoring and team plans to successfully implement the Strategy.

Waste Services will embed continuous improvement into the organisation to deliver across all its objectives by following the PDCA (Plan, Do, Check, Act) Cycle.

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Our SUSTAINABLE WASTE Strategy

Appendix 1
White Paper

2023

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City of Newcastle

Welcome

Acknowledgment of Country

'Niirun Yalawa Awabakal and Worimi burrei'

We all sit on Awabakal and Worimi land

The City of Newcastle 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. The City of Newcastle Acknowledges the custodianship of the Awabakal and Worimi peoples and the care and stewardship they have performed in this place since time immemorial.

'Wunyibu wunyibu warra wunyibu wunyibu gkuuba Aboriginal burrei'

Always was, always will be Aboriginal land

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City of Newcastle

Contents

Introduction

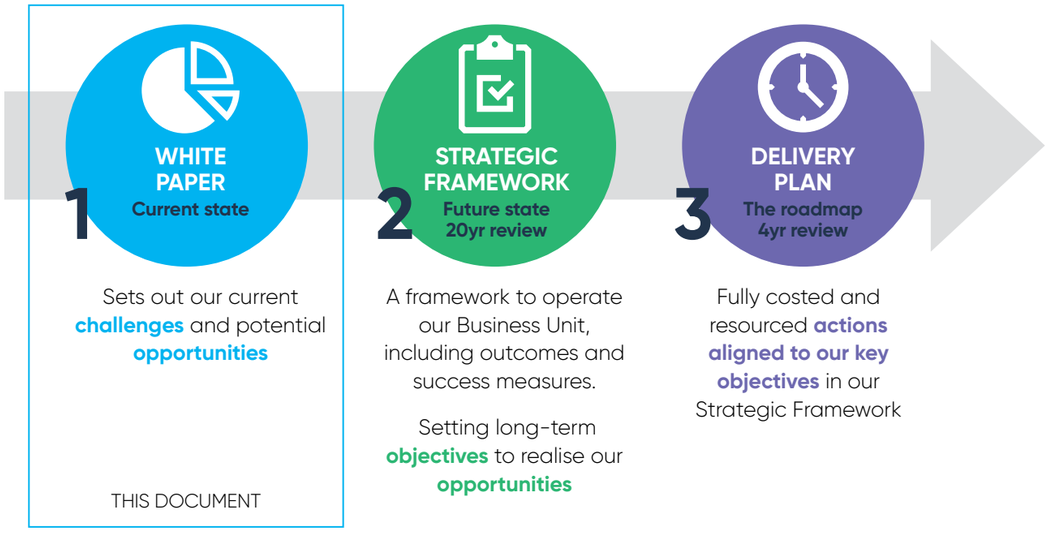
City of Newcastle (CN) is intent on being a considerate user of the limited resources we have on our planet. We are committed to empowering our organisation and community to view their 'waste' differently - as resources and materials that can have another life outside of landfill.

The longer we recirculate recyclable materials in the economy the greater their value and the better it is for the environment. This will produce greater prosperity for our people and our planet. All materials have an embedded value which can be either put to good use and back in the economy via reuse, recycling or recovery, or, be disposed of forever.

At CN, we provide waste minimisation and recycling solutions to our community while ensuring the long-term sustainability of our waste and resource recovery operations. Underpinning all these activities is the key theme of 'efficient use of resources'. This means the safe and efficient collection of waste and recycling from residents, recovering as many recyclable and reusable materials as possible from all of the waste we manage, providing opportunities to businesses to reduce their waste and work with us to divert waste from landfill, and the safe and effective disposal of those materials for which no other option exists.

We are committed to avoiding the generation of waste across our operations and maximising the value obtained from all materials we use – at CN and across our community.

Key Documents



Purpose of this White Paper

This White Paper explains our current position and achievements in waste and resource management across our operations and our community.

It sets out information about the context of the waste and recycling landscape, CN's historic performance and current position, as well as potential opportunities. It also contains information we have used to develop Our Sustainable Waste Strategy in line with the Sustainable Newcastle Theme within Newcastle 2040 Community Strategic Plan (CSP) and the Circular Economy Priority to Design out Waste by:

- Creating sustainable material cycles through the city's economy
- Establishing resource recovery industries and circular economy precincts
- Increasing recycling and productive reuse of organics

The scope of this White Paper and corresponding Our Sustainable Waste Strategy (the Strategy) is focused on:

- the operations of the Summerhill Waste Management Centre (SWMC),
- CN's waste collection services,
- and customer interfaces with CN residents regarding waste services (public place bins and Community Recycling Centres).

These are the areas of influence of CN's Waste Services (WS) Business Unit which will be responsible for implementing the Strategy. The WS Unit's area of influence does not control CN's broader sustainability initiatives, such as energy, water and sustainable procurement, however, the WS Unit intends to play a significant role in supporting these wider initiatives and demonstrating the benefits that can come from them.

We have also developed a Waste and Resource Recovery Policy that will support Our Sustainable Waste Strategy to provide long-term direction and commitment toward improved waste and resource management for the city.

The Strategy will see us pivot our operations toward resource recovery, with landfill as a support service, focussing on how we deliver a balanced outcome (cost, service levels and environmental outcomes) for the community, customers and CN.

Developing this White Paper

This White Paper draws on information from:

- Best practice Waste and Circular Economy Strategies prepared by other local councils in Australia and internationally
- Existing and upcoming CN Strategies and Plans
- Consultation with CN's waste management team and technical staff members
- Consultation with the waste and resource recovery industry
- Consultation with other key government organisations such as the Department of Planning and Industries (DPIE), NSW Environmental Protection Authority (EPA), and the Hunter Joint Organisation of Councils (HJOC).

We engaged experienced consultants to work with us and provide an independent perspective on the preparation of the White Paper.

The following table provides a high-level overview of what we did and what we wanted to know.

Table 1: Overview of consultation, engagement and studies

	Market analysis and consultation	Policy review	Community and regional consultation	Organisational diagnostic and consultation
What did we do and who did we engage with?	• Several economic studies commissioned • Market sounding for recyclables commissioned with private and public sector	• Over 30 key policies and strategies reviewed • Grants funding scan	• 3,313 CN residents engaged for early strategy input[1]. Consultation with: • Hunter Councils • CN Advisory and Standing Committees • Local Waste and Resource Recovery businesses	Organisational diagnostic and consultation with: • 88 Waste Services Staff • Various CN technical staff; CEO, Transport Planners, Strategic Planners, Environmental and Economic Development Officers, Finance team, Corporate Affairs team, Assets and Projects team
What did we want to know?	• The current market environment, what the gaps are and how we can fill those gaps • Our customer needs and constraints • Customer expectations on service levels	• What's important at an international, federal, state, regional and local level? • How to create alignment • What funding opportunities are and will be available?	• What's important to the community? • Community expectations on service levels • Regional needs and capacity • Gauge interest in regional collaboration	• How do we use our resources to meet customer needs at the best value? • What structures and systems we use to manage technical systems and achieve our objectives? • The way people think and feel about their work and conduct themselves

[1] Additional engagement will occur leading up and during the Public Exhibition stage of the strategy. This will include schools, CN community, industry and stakeholder groups

In this White Paper

This document is broken down into five core chapters. This includes:

1. Market Drivers

The waste and resource recovery industry are governed by the global and local commodity market. Any disruption in this market impacts our ability to manage our waste and resources. Eg China National Sword Policy.

2. Policy Drivers

Key policy at international, national and state levels describe key aspirations. This provides CN with strategic organisational direction.

3. CN and Hunter Region Needs

Waste and recycling needs are not isolated to CN. The Hunter Region also shares similar needs.

4. CN Waste Services Capability

CN owns and operates a collection and large waste management facility.

5. Our Opportunity

By understanding the gaps, constraints and strengths in each of the areas above allows us to understand Our Opportunity.

Our Core Principles

In forming Our Sustainable Waste Strategy, we were guided by two core principles that we believe best capture what our community has told us they want, what our regional needs are now and into the future, and what the waste and recycling market and policy framework are driving towards for the City of Newcastle (CN).

Waste Hierarchy

The waste hierarchy sets out the priorities for the most efficient and most sustainable use of resources, establishing the framework under which all waste decisions should be made and all waste managed.

The waste hierarchy prioritises waste avoidance and reduction as the most preferable option for waste management, then addresses the different options for managing waste that can't be avoided, in order of best environmental value, with disposal to landfill as the least preferable option. In considering the priorities in the waste hierarchy, efficiency and sustainability of the chosen options must also be considered.

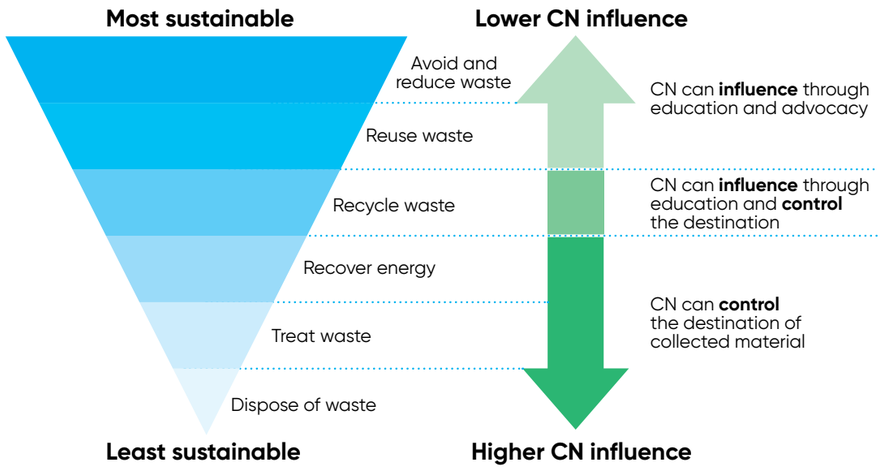
While waste avoidance is most preferable, it is also the aspect over which local government has the least influence. Local governments typically have more control over the lower portion of the waste hierarchy as they have a responsibility to provide waste collection, processing and disposal services for municipal waste and can influence the final destination of the material they collect.

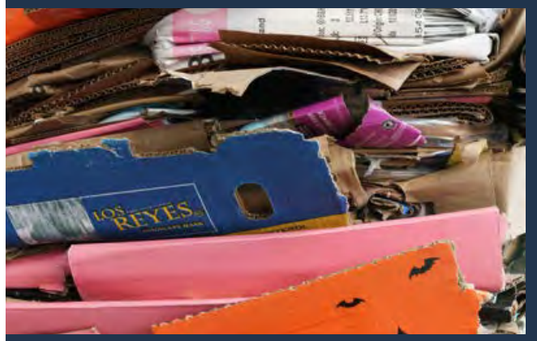
Mechanisms for change are important to consider when developing actions for a strategy. The following table describes what is in CN's sphere of control to manage change.

Table 2: City of Newcastle Waste Services sphere of control

Control **CN can *directly* impact**	**Influence** **CN can *indirectly* impact**	**Concern** **Impacts CN but is beyond CN's ability to effect change**
• Materials recovery rate and diversion of waste from landfill through physical infrastructure such as sorting and reprocessing • Management of services – collection frequency, bin systems and fees • Management of commercial waste through CN collections and material received at CN's facility • Procurement of goods and services including requirement for goods to contain recyclable content	• Behaviour change through education and communication • Advocacy for waste diversion • Incidence of illegal dumping through the implementation of penalties and education campaigns • Participation rate in the use of services and programs	• Global market shifts • State Government waste levy • Other council decisions on waste management • Product design • Product purchase/ consumption

Figure 1: Waste Hierarchy





Recycling **1 tonne of paper and cardboard saves 12 trees** from being harvested.

In 2017-18 Newcastle households recycled 7,401 tonnes of paper and cardboard, saving 96,200 trees.

It takes 5 tonnes of bauxite to make 1 tonne of aluminium cans. In 2017-18 **Newcastle households recycled 95 tonnes of aluminium,** saving 475 tonnes of bauxite from being mined.

Circular Economy

In Australia, and across the globe, we are using resources at an ever-increasing and unsustainable rate.

We are using the resources that future generations will rely on. Without a shift in the way we consume, use and manage resources, future generations will struggle to meet their needs.

A circular economy helps answer the challenge of meeting our own needs without compromising future generations' ability to meet their needs.

Looking beyond the current take-make-waste extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste and pollution out of the system.

Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles: design out waste and pollution; keep products and materials in use (ideally at their highest and best value); and regenerate natural systems.

Blue Environment (2021) Australian standard for waste and resource recovery data and reporting https://www.awe.gov.au/sites/default/files/documents/standard-wrr-data-and-reporting-final-issued-v2.pdf

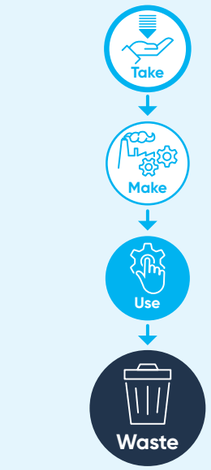
We are currently in a state of transition from a linear economy to a circular economy

CN has adopted the NSW Government's principles of a circular economy[2] for the development of our Strategy:

1. Sustainable management of resources
2. Valuing resource productivity
3. Design out waste and pollution
4. Maintain the value of products and materials
5. Innovate new solutions for resource efficiency
6. Create new circular economy jobs
7. Foster behaviour change through education and engagement

[2] NSW Government (2019) NSW Circular Economy Policy Statement

Figure 2: From linear economy to circular economy

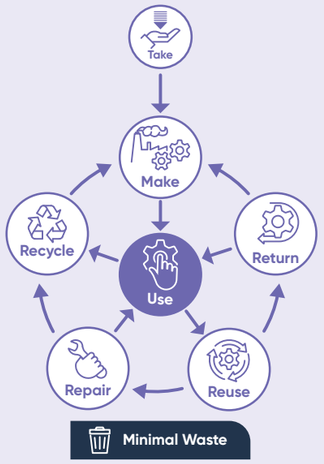


Linear Economy

- Traditional model
- Economy is dependent upon abundant inputs of finite raw materials
- Natural resource intensive – using up our future generations resources
- High level of waste
- Unsustainable

Recycling Economy

- Commenced in response to increasing waste generation and recognition that many resources are finite and even renewable ones were being consumed faster than they can be replaced
- Reduces economic dependence upon inputs of finite raw materials
- Reduces reliance on virgin materials for new products
- Recognises materials as a resource to be used again and again
- Reduces waste requiring disposal
- Reduces energy and water requirements to manufacture most new items



Circular Economy

- Decouples reliance on virgin materials for both manufacturing and economic growth
- Maintains the value of materials by keeping them in the productive economy for as long as possible
- Reduces the amount of virgin materials required for products
- Significantly reduces the amount of waste, greenhouse gas emissions and pollution created.
- Reduces energy use in manufacturing
- Reduces consumption of potable water for manufacturing of new products
- Increases opportunities for job creation[3], economic growth[4] and innovation

[3] The recycling sector in Australia currently generates 9.2 jobs per 10,000 tonnes of waste compared to only 2.8 jobs for the same amount of waste sent to landfill (Access Economics, 2009)
[4] KPMG, 2020, Potential economic pay-off of a circular economy for Australia, https://assets.kpmg/content/dam/kpmg/au/pdf/2020/potential-economic-pay-off-circular-economy-australia-2020.pdf

City of Newcastle

1 Market Drivers

Recyclable and waste materials are part of a global and local commodity market and disruptions in these markets impact how services are delivered.

City of Newcastle is committed towards long-term security around its red, yellow, green-lid bin services:

Red: **Residual waste**

Yellow: **Recyclables**

Green: **Organics**

Understanding these drivers and planning for the future will ensure long-term local resilience to market changes.

Overview

The following drivers in this section are the catalyst for change in the waste management and resource recovery industry, globally and locally. These changes provide CN with opportunities to diversify, enhance or innovate our services to ensure long-term local resilience to market changes.

At CN, we have a key strategic asset in Summerhill Waste Management Centre (SWMC), with ample space to develop a Resource Recovery Hub that can provide local solutions for not just CN's waste but also for the region, and for many decades to come.

In addition, CN's Economic Development Strategy identified SWMC as a site in the Newcastle Innovation Arc, with the potential to drive new job creation in growth areas including circular economy, energy innovation, advanced manufacturing and reprocessing, and development of secondary material and by-product markets.

These opportunities place CN in the position of becoming a leader within the waste and resource recovery industry and a catalyst for the region's circular economy.

CN is committed to long-term security around its red, yellow, and green-lid bin services:

Red
Residual waste

Yellow
Recyclables

Green
Organics

This section will highlight associated market drivers with these services.

Residual Waste

In NSW, 4.6 million tonnes of residual waste (from municipal solid waste and commercial and industrial waste) was disposed to landfill in 2018–19[5]. Landfilling should be the last option of disposal when considering the waste hierarchy, however, this is often not the case.

Compositional waste audits conducted by the NSW EPA revealed:

- Over two-thirds of the material in our red bins could be diverted from landfill with 45% comprised of food and organics and 22% of dry recyclables[6].
- Over two-thirds of material arriving at a landfill from commercial and industrial waste was a mixed waste load and 51% of this material was considered degradable organic[7].

There is a significant opportunity to divert or avoid more material ending up in the landfill. Some factors that will contribute to this include:

- Access to infrastructure (reuse, recycling and recovery),
- Product design and Extended Producer Responsibility, and
- Ongoing education.

However, a key consideration is the cost to dispose of the material. Ensuring the cost for landfilling is higher than other diversion activities will incentivise and drive resource recovery outcomes as well as ensuring our resources are kept in circulation and their value is maximised.

The continual population growth in Sydney Metropolitan Area is placing significant pressure on the few existing disposal options - Veolia's Woodlawn and Suez's Lucas Heights. Inert landfill capacity will be exceeded in 2028 and putrescible by 2036[8]. Landfills are a depleting and essential infrastructure for the foreseeable future.

The development of new landfills is challenging due to:

- High cost of land in NSW metropolitan areas;
- Challenges in securing suitable properties close to transport infrastructure;
- The reluctance of some councils or communities to have waste related infrastructure located in their vicinity;
- Lack of timely data on waste flows and holistic information on the location and volume of waste generated;
- Transportation challenges, such as poor road networks, congestion; time restrictions; long travel times and lack of convenient aggregation points[9].

An improved diversion rate will help extend the life of existing infrastructure, however alternative disposal technology options such as Energy from Waste are currently being explored nationally and internationally.

Our changing consumption habits has led to new and complex waste streams

Product design and advanced manufacturing have contributed to the development of products that are much more complex to re-process often leading to new waste streams that need to be managed. This includes trends such as:

- Complex packaging (e.g food packaging and product/transport packaging)
- Growth in e-waste (e.g. mobile phones, portable electronic devices, laptops; televisions, lighting equipment, and other electronic equipment);
- Increased adoption of solar panels and battery systems; and
- Shifts away from fibres and metals to complex plastics.

[5] DPIE (2021) NSW Waste and Sustainable Materials Strategy: A guide to future infrastructure
[6] EPA (2011 and 2017) MSW Waste Audits
[7] EPA (2014) Candl Waste Audits
[8] DPIE (2021) NSW Waste and Sustainable Materials Strategy: A guide to future infrastructure
[9] NSW EPA (2019) NSW Waste Sector Volume I: Key Findings

Recyclables

Recyclable materials are a tradable commodity much like oil, steel and gold. The sale of recyclable materials on the global market helps offset the costs of collecting, sorting and processing these materials, allowing us to provide a cost-effective recycling service to our residents. As with any commodity on the global market, changes in market conditions have the potential to significantly impact the recycling industry.

Global Market Drivers

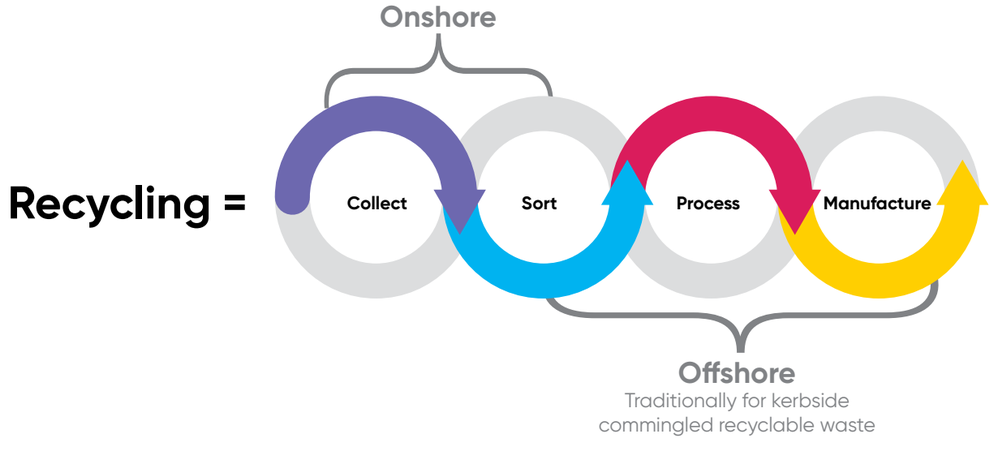
2018 China National Sword Policy

- China was one of the world's main markets for recycled paper and plastics, processing nearly half of the world's exported recyclables.
- The policy placed stringent limits on acceptable contamination of recyclable materials to 0.5%.
- Australia was then reliant on processing the majority of recycling offshore.
- The value of these commodities declined, leading to a glut of low-valued materials in Australia, and other countries, with no end market to on-sell.
- The oversupply of material with no market meant stockpiling and/or landfilling of the material and increased costs to handle the material.

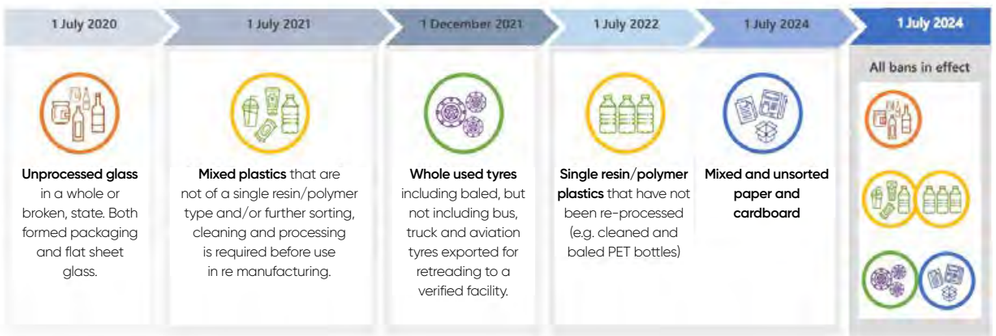
National Market Drivers

2020 COAG Waste Export Ban

- The Council of Australian Governments (COAG) introduced a Waste Export Ban, which set out a timeline to phase out exports of glass, plastic, paper, cardboard and tyres from Australia.
- This was legislated via the *Recycling and Waste Reduction Act 2020* and all bans will be in effect by 2024.
- The intent is to stabilise the Australian recycling industry, increase the quality of recycled materials and develop domestic markets for the processing and use of recycled material.



COAG Waste Export Ban Timeline



Local Market Drivers

2020 Hunter Materials Recycling Facility Closure

The Hunter region faced the closure of its only Materials Recycling Facility (MRF) in Gateshead[10], which was processing yellow bin recyclable materials. Fortunately, CN was able to secure processing capacity at the iQ Renew Somersby facility in Central Coast, while a longer-term option for a facility to be developed at Summerhill Waste Management Centre is delivered.

With the closure of the only MRF in the region, other Hunter Councils including Lake Macquarie and Maitland now transport their recyclables to Sydney at additional cost to their ratepayers, and a higher overall cost paid by Newcastle ratepayers.

The ability to process recyclables is only one piece of the puzzle. Supporting end markets is just as important to ensure our materials truly get recycled and promote a circular economy. The greatest barriers to a circular economy are improved product stewardship with manufacturers considering end-of-life in design and using recycled materials to manufacture new goods. Challenges in increased recycled material use include:

- The cost of recycled materials compared to virgin materials is generally higher
- The perception that recycled material is of lower quality than virgin materials
- Virgin materials do not incorporate the costs of external environmental impacts
- The cost of recycled materials is negatively impacted by contamination and lack of scale

These challenges can be addressed by understanding what manufacturers require through material specifications and ensuring processing facilities, like a MRF, are designed to meet these requirements and are flexible enough to respond to change.

[10] https://www.newcastle.nsw.gov.au/council/news/latest-news/changes-to-city%E2%80%99s-recycling-processing-contract-(1

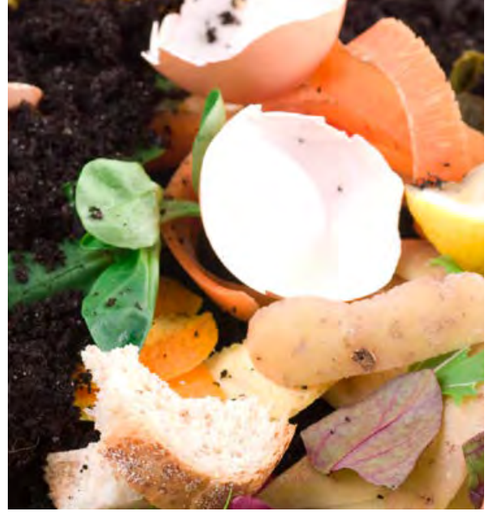
NSW Waste and Sustainable Materials Strategy

Recycling is expensive to transport. It is preferable to sort recycling into single component streams, and bundle ready for transport, within the region it is generated.

This will not only improve transport efficiencies, it will enable MRFs to target distribution of sorted materials to end markets, including local destinations where possible.

To achieve the targets of the NSW Waste and Sustainable Materials Strategy, MRFs will be required to enhance their existing sorting model to provide higher quality outputs with reduced contamination.

The main priority for MRFs is to improve the quality of output products, taking a whole of supply chain approach. At the MRF (if site constraints permit), the priority will be to improve quality of glass, plastic, paper/card and metals through primary sorting equipment and potentially additional processing of sorted materials to provide a higher quality product of sorted materials.



Organics

Food and Garden Organics

The NSW EPA estimated organics waste recycled in NSW is 1.6 million tonnes for certain organic sources, including:

- Garden organics (green waste) from arborist, land clearing or felling operations;
- Kerbside garden organics;
- Food organics and garden organics (FOGO);
- Commercial and industrial food waste;
- Organic outputs from municipal solid waste processing[11].

There is however a further opportunity for approximately 1.26 million tonnes[12] of recoverable organics that is currently sent to landfill. This presents a significant waste avoidance and recovery opportunity to divert organics going into landfill. The National Food Waste Strategy highlights:

> Globally, about one billion tonnes of food produced for human consumption is wasted each year. This wastage costs the global economy around US$940 billion, consumes nearly a quarter of all the water used in agriculture, and produces eight per cent of global greenhouse gas emissions[13].

The organics processing and compost production industry has grown over the last 20 years in response to the desire to reduce waste to landfill and comply with government policy increasing the supply of compost. To date, the industry has been able to cope with the increase in organics and compost. The growth has been managed through government financial incentives, the entry of new players and significant expansions of operations and businesses.

Compost can be sold to a range of markets including:

- Urban amenity (residential and commercial landscaping, council playing fields and parks)
- Intensive agriculture (vegetable production, orchards, turf production, viticulture)
- Extensive agriculture (broadacre cropping, pasture establishment, forestry)
- Rehabilitation (mine rehabilitation, erosion control works, revegetation)
- Environmental remediation (contaminated sites remediation, biofiltration)[14]

The urban amenity market remains the key source of demand for organics, absorbing 68% of compost produced[15]. It demands high-quality products with low levels of contamination.

Contamination particularly within council FOGO streams is a constant challenge for the industry as it is costly to manage, and can impact workers and the quality of the compost.

Compost is generally sold into local or regional organics markets. High-quality compost, low contamination levels and differentiated products are key for ensuring markets and sustainable prices.

[11] NSW EPA (2019) NSW Waste Sector Volume II: Situational Analysis
[12] DPIE (2021) NSW Waste and Sustainable Materials Strategy: Future Infrastructure Needs
[13] Australian Government (2017) National Food Waste Strategy. Department of the Environment and Energy.
[14] NSW EPA (2019) NSW Waste Sector Volume II: Situational Analysis
[15] NSW EPA (2020) NSW Organics Market Analysis

Challenges and Opportunities

Challenge	Opportunity
Urban encroachment is an emerging problem for SWMC. This may place limitations on future waste and recycling infrastructure to meet our community's needs.	**Develop a strategy to maintain appropriate buffers around SWMC** Work with local and state planners to **advocate for greater protection** of the site for CN and the region. **Work with surrounding developers** to ensure land developed close to SWMC does not conflict with any future potential activities at SWMC.
No recyclables processing facilities in the region.	**Development of a Material Recovery Facility (MRF) at SWMC** A MRF will provide economic benefit to CN in the form of jobs and additional revenue as well as reducing CN's environmental and the financial impacts of sending recyclables long distances for processing. A MRF will also create long-term resilience for our municipal recycling stream.
Limited end-markets for low-quality recyclables in the region and nationally. **Stringent requirements** on output material specifications require advanced processing technology which is significantly more expensive than traditional processing. **Waste export ban** on glass, plastic, paper, cardboard and tyres by 2024.	**Higher quality output due to advanced processing technology** The MRF will be developed with advanced processing technology to achieve high-quality outputs, making the end product more desirable to the recycling market. It will also enable alignment of end products with market specifications for recycled materials and has the potential to localise supply chains and catalyse growth in local manufacturing. **Partnering with manufacturers in the operation of the MRF.** This could include the potential establishment of co-locating manufacturing businesses that use MRF output commodities such as glass beneficiation.
Lack of markets for compost.	**Ensure high-quality compost is develope**d for high-value markets, such as urban amenity, through investment in education and improved source separation to minimise contamination. **Review optimal delivery models** with consideration around establishing strong purchasing networks.
Investment in infrastructure.	**Strategic investment in infrastructure** CN can invest in its own infrastructure to process its own recyclables and organics. However, with additional investment, the infrastructure can be developed to process the Hunter Region's material. This will improve the localisation of manufacturing, provide greater stability in end markets and help reduce costs to CN residents. Additional revenue may be attained by increasing facility capacity and opening up opportunities for commercial and other customers.

2 Policy Drivers

Effective policy is developed through understanding global and local market drivers and responding through evidence-based research and objective-setting. This can be a significant catalyst for positive industry market transformation.

Our national and state policies have identified key targets and objectives which CN will adopt through Our Sustainable Waste Strategy and/or other CN Strategies.

There is an opportunity to secure grants from the Federal and State governments to assist to drive market transformation to benefit the environment and economy. CN and SWMC is well positioned to invest in infrastructure and access these grants.

Key Strategies and Policies

Our approach to waste management and resource recovery is guided by a framework of international, national and state goals and policies that drive decision-making. The targets and objectives of key strategies and policies are provided below.

United Nations – Sustainable Development Goal 12 focuses on substantially reducing waste generation through prevention, reduction, recycling and reuse. Sustainable consumption is about doing more and better with less. It is also about decoupling economic growth from environmental degradation, increasing resource efficiency and promoting sustainable lifestyles. Goal 12 targets:

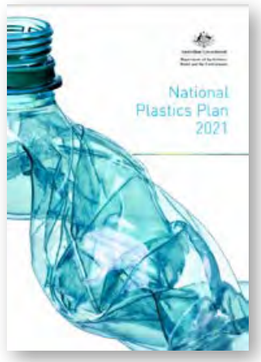
- Sustainable public procurement practices,
- Global food waste at retail and consumer levels, and
- Ensuring that people everywhere have the relevant information and awareness to minimise and managing waste sustainably.

National Waste Policy and National Waste Policy Action Plan provide the framework for waste management and resource recovery in Australia. Targets:

- Reduce total waste generated in Australia by 10% per person by 2030
- 80% average resource recovery rate from all waste streams following the waste hierarchy by 2030
- Halve the amount of organic waste sent to landfill by 2030
- Significantly increase the use of recycled content by governments and industry
- Ban the export of waste plastic, paper, glass and tyres, commencing in the second half of 2020
- Phase out problematic and unnecessary plastics by 2025.

National Food Waste Strategy provides a framework to support collective action towards halving Australia's food waste by 2030. Four priority areas were identified:

- Policies that are supportive of food waste avoidance, reduction and repurposing
- Improvement and adoption of technologies, processes and actions to avoid and reduce food waste
- Development of markets to support the repurposing of food waste
- Practices and attitudes towards avoiding and reducing food waste are adopted and sustained.



National Plastics Plan outlines our approach to increasing plastic recycling, finding alternatives to unnecessary plastics and reducing the impact of plastic on the environment. This will be achieved through:

- Working with industry on the prevention of problematic plastics
- Greater legislation around responsibility for plastics and investing in increasing recycling capacity
- Improved consumer education for informed decision making
- Removing plastic pollution and litter
- Investment in research for plastic recycling technologies.

Product Stewardship Act 2011 refers to the 'whole of life' custodianship of products within the economy. The framework provides a way to effectively manage the environmental, health and safety impacts of products, and in particular those impacts associated with the disposal of products to landfill.

A list is published each year of products being considered for coverage by the legislation. Products currently on the National Waste Policy implementation plan for product stewardship action include televisions and computers, packaging, tyres and mercury-containing lights.

Released in June 2021, **NSW Waste and Sustainable Materials Strategy 2041** aims to minimise what we throw away and use and reuse our resources efficiently, making them as productive as possible. We will end up with less waste, fewer emissions, minimised harm to our environment and more jobs. The move will boost innovation and help drive our economy. The targets are to:

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

NSW Plastics Action Plan focuses on four outcomes and six key actions to help meet the NSW Waste and Sustainable Materials Strategy targets around plastics. This includes:

Outcome 1: Reduced plastic waste generation

- Action 1: Introduce new legislation to reduce harmful plastics
- Action 2: Accelerate the transition to better plastic products

Outcome 2: Make the most of our plastic resources

- Action 3: Support innovation

Outcome 3: Reduced plastic leakage

- Action 4: Tackle cigarette butt litter
- Action 5: Reduce the risk of nurdles* entering the environment

Outcome 4: Improved understanding of the future of plastics

- Action 6: Support plastics research

* Nurdles are small plastic resin pellets, less than 5mm in diameter, that are used in the manufacture of plastics. Their shape and size often cause them to be mistaken as food by marine animals if they enter our waterways

NSW Circular Economy Policy Statement is designed to help guide Government decision-making as we transition to a circular economy, to deliver positive economic, social and environmental outcomes. It outlines seven key principles:

1. Sustainable management of all resources
2. Valuing resource productivity
3. Design out waste and pollution
4. Maintain the value of products and materials
5. Innovate new solutions for resource efficiency
6. Create new circular economy jobs
7. Foster behaviour change through education and engagement

Hunter/Central Coast Waste Avoidance and Resource Recovery Strategy** targets:

- Reduce waste generation per capita consistently to achieve a 4% reduction by 2021-22 from the 2011-12 baseline (Key Performance Indicator (KPI): kg/capita/year)
- Achieve a regional resource recovery rate for Municipal Solid Waste (MSW) of 70% by 2021-22 from a 2011-12 baseline (which was measured at 38%)
- Achieve a landfill diversion rate of 75% by 2021-22 from a 2011-12 baseline
- Provide facilities for core problem waste in all council areas by 2021-22
- Reduce the volume of litter by 40% by 2020

**The Hunter/Central Coast Waste Avoidance and Resource Recovery Strategy, and CN's Environmental Strategy are currently under review.

Community Strategic Plan
Vision: In 2040, Newcastle will be a liveable, sustainable, inclusive global city.

Theme 2

- 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.

Priority 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.

Climate Action Plan Goal: *By no later than 2030, City of Newcastle will reach Net Zero Emissions for its Operations and by 2025, 50% reduction in carbon emissions from operations including SWMC.* Key actions include:

- Undertake an audit of recycled materials and identify opportunities for their utilisation within CN operations
- Establish organics processing, materials recovery and other processing facilities at SWMC to provide best practice waste diversion and recovery.
- Transition all CN heavy trucks including waste collection vehicles to electric options where available and monitor and trial improvements in technology.

The third priority of the **Economic Development Strategy** is *'City Shaping'*.

Objective 3.5 relates to Circular Economy:

- To support industry transformation leveraging economic benefits of transitions to zero-waste and net zero emissions.
- The strategy also identifies SWMC as a key innovation precinct for the City, with opportunities for industry-led circular economy investment.

Key actions that have arisen from these strategic documents are:

- Avoiding the generation of waste
- Improving resource recovery
- Recognising that waste is a valuable resource
- Taking responsibility for the waste we generate and managing it in accordance with its highest value
- Managing waste and recyclables locally, as part of a broader circular economy

Our **Sustainable Waste Strategy** is designed to incorporate these actions while balancing community expectations and financial sustainability.

Strategic Investment for our Future

The following funding streams are a summary of how the above strategies and policies are supported through strategic investments. SWMC is an operational waste and resource management facility, strategically located at the gateway to the Hunter Region and with good links to a major transportation network. It is an ideal location for additional resource management and manufacturing infrastructure, which the majority of these funding streams support.

Funding Stream	Overview
National	
Modern Manufacturing Initiative	The program forms part of the Federal Government's JobMaker plan which seeks to rebuild the economy, create jobs and recover from the COVID-19 recession. It was announced as part of the $1.5 billion Modern Manufacturing Strategy in the 2020-21 Federal Budget. Funding is available under the **Recycling and Clean Energy** priority.
Recycling Modernisation Fund	The Australian Government will invest $190 million into this fund to leverage $600 million of recycling infrastructure investment and drive a billion-dollar transformation of Australia's waste and recycling capacity. The fund and other measures that support Australia's National Waste Policy Action Plan, will create approximately 10,000 new jobs and divert over 10 million tonnes of waste from landfill.
Clean Energy Finance Corporation (CEFC) – Australian Recycling Investment Fund	CEFC investment commitments through the Australian Recycling Investment Fund align with the principles of the circular economy. Through the recycling fund, CEFC expects to provide either debt and/or equity finance to eligible larger-scale commercial and industrial projects. The total funding pool is $100 million.
State	
Waste Less, Recycle More	The initiative is funded through the NSW Government's section 88 waste levy and is the largest waste and recycling funding program in Australia. Waste Less, Recycle More funding priorities 2017-21: • Local government waste and resource recovery – $70 million • Illegal dumping prevention and waste enforcement – $65 million • Household problem wastes – $57 million • Waste and recycling infrastructure – $48 million • Organics infrastructure – $35.5 million • Litter prevention and enforcement – $30 million • Business recycling – $22.5 million • Recycling innovation – $5 million • Heads of Asbestos Co-ordinating Authorities - $4 million.
Remanufacture NSW	Jointly funded by the Australian Government's Recycling Modernisation Fund and NSW Waste Less, Recycle More initiative. A funding pool of $35 million to support co-investment of infrastructure projects that will address export ban materials and provide opportunities for new innovative technologies using circular economy principles.
Better Waste and Recycling Fund	The Better Waste and Recycling Fund provides funding to local councils and regional groups of councils to make it easier for their communities to recycle more and decrease the amount of waste sent to landfill. The fund supports a broad range of projects to improve recycling, engage communities, reduce waste generation, tackle littering and illegal dumping, and contribute to achieving the NSW recycling targets.

CN is monitoring and applying where eligible for funding to ensure we meet our strategic objectives most cost-effectively as well as to enable us to enhance our resource recovery and waste management programs and services. Below is a summary of co-funded initiatives:

SWMC Resource Recovery[17]

$1 million funded under Waste Less, Recycle More

Infrastructure stream for the establishment of a 2,000m² Resource Recovery Centre (RRC) at SWMC.

The RRC enables CN staff to separate our recyclable and recoverable materials from mixed waste loads, increasing resource recovery from 3% to 20%.

$1million
towards Resource Recovery Centre

17%
waste recovery increase from 3% to 20%

$155,000
towards household problem waste

350
tonnes household problem waste safely disposed

SWMC Community Recycling Centre[18]

$155,000 funded under Waste Less, Recycle More

Household problem wastes stream for the establishment of a Community Recycling Centre at SWMC to provide residents with the opportunity to safely disposed of chemicals which may cause harm to the environment or human health. This facility has collected over 350 tonnes of household problem wastes, such as paints, oils and batteries for recycling or safe disposal since opening.

SWMC Solar Farm[19]

$6.5 million funded via a CEFC loan interest loan for a 5MW Solar Farm built on a rehabilitated former landfill

The site exceeded expectations by generating twice the expected revenue[20], of $420,000, in the first 6 months.

$6.5million
to build on-site solar farm

Better Waste and Recycling Fund initiatives

$2 million over the 10 year life of the grant funding, supporting 30 projects focused on:

- Education, information and behaviour change programs addressing waste avoidance, resource recovery and recycling, litter and marine debris, including our home composting program
- Public place waste and recycling infrastructure
- Waste audits
- Litter and illegal dumping

$5million
ongoing funding

SWMC Materials Recovery Facility[21]

CN secured $5 million in funding under **Remanufacture NSW** to support the delivery of Materials Recovery Facility.

SWMC Organics Facility[22]

$1.5 million funded under Waste Less, Recycle More

Organics stream to enable early planning for an organics processing facility at SWMC that, when fully operational, will be able to divert up to 50,000 tonnes of food and garden organics annually.

up to 50,000
tonnes of food and garden organics can be diverted

[17] https://newcastle.nsw.gov.au/council/news/latest-news/resource-recovery-centre-diverts-over-3-100-tonnes
[18] https://newcastle.nsw.gov.au/living/waste-and-recycling/problem-wastes/chemicals/summerhill-community-recycling-centre
[19] https://newcastle.nsw.gov.au/council/news/latest-news/cefc-finance-to-build-newcastle-s-solar-farm
[20] https://www.newcastle.nsw.gov.au/council/news/latest-news/solar-farm-powering-city-operations-and-revenue
[21] https://www.newcastle.nsw.gov.au/council/news/latest-news/city-awards-contract-for-cutting-edge
[22] https://www.environment.nsw.gov.au/funding-and-support/nsw-environmental-trust/grants-available/remanufacture-nsw/project-summaries-2021#materialsprocessing

8,000
reusable coffee cups distributed, saving an estimated 416,000 single-use cups per annum

2,500
dog waste pouches distributed to reduce littering of pet waste

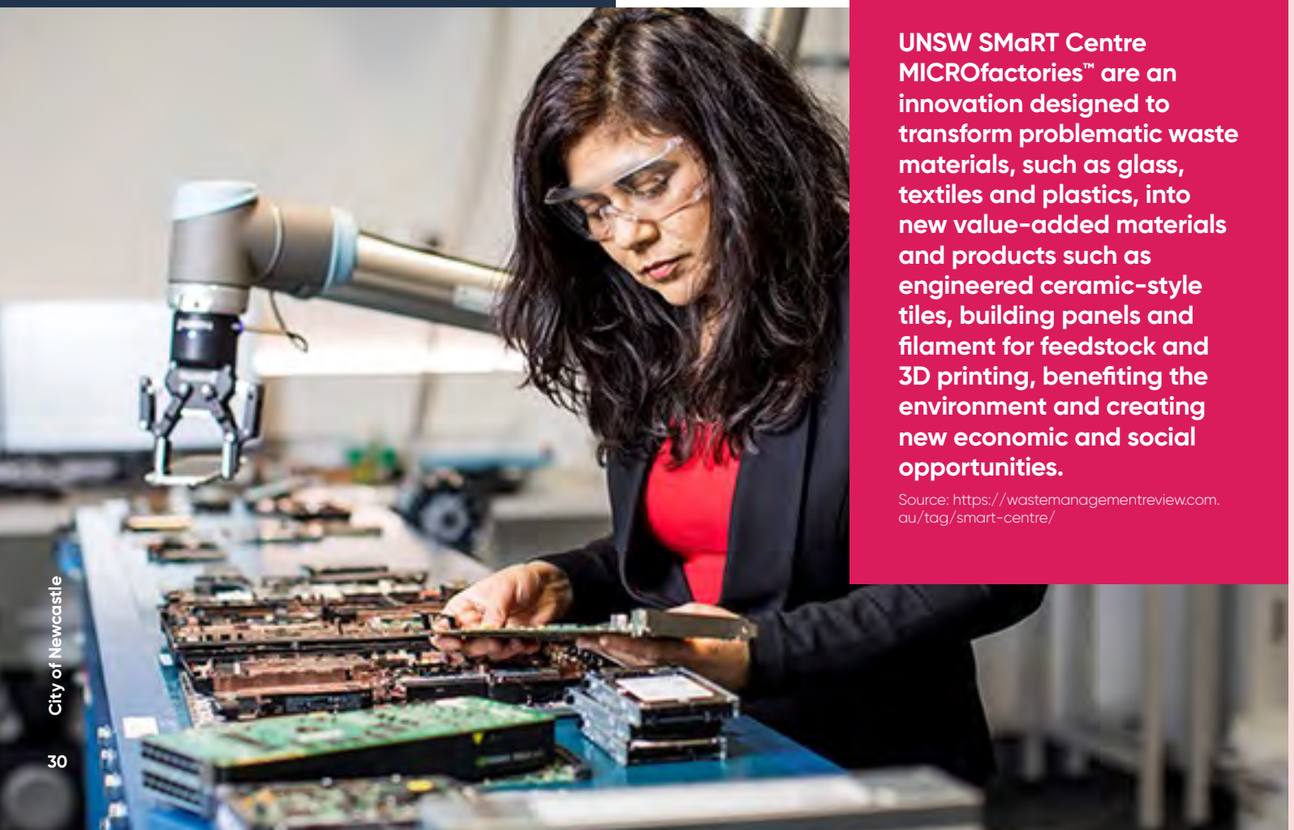
1,000
residents signing up for subsided home composting products resulting in 9,508kg of food waste diverted from landfill

40
public place dual waste and recycling stations installed in prominent, high traffic locations such as Bathers Way, Newcastle Foreshore and Stockton Foreshore

Legislative Requirements

Waste Services is governed by acts and regulations to minimise harm to human health and the environment. This includes;

- *Local Government Act 1993 (NSW)*
- *Essential Services Act 1988 No. 41*
- Work Health and Safety Act 2011 and Work Health and Safety Regulation 2017
- *Protection of the Environment Operations Act 1997 (NSW)*
- Protection of the Environment Operations (General) Regulation 2009
- Protection of the Environment Operations (Waste) Regulation 2014
- *Privacy and Personal Information Protection Act 1998*
- *Waste Avoidance and Resource Recovery Act 2001*
- State Environmental Planning Policy (Infrastructure) 2007
- *Heavy Vehicle (Adoption of National Law) Act 2013 (NSW)*



UNSW SMaRT Centre MICROfactories™ are an innovation designed to transform problematic waste materials, such as glass, textiles and plastics, into new value-added materials and products such as engineered ceramic-style tiles, building panels and filament for feedstock and 3D printing, benefiting the environment and creating new economic and social opportunities.

Source: https://wastemanagementreview.com.au/tag/smart-centre/

Challenges and Opportunities

Challenge	Opportunity
Reduce total waste generated in Australia by 10% per person by 2030.	**Development of a long-term, data-driven behaviour change program** The development of a long-term approach towards community behaviour change to ensure we have an educated community that can make informed decisions about consumption to reduce our impact on the planet. Undertaking long-term waste composition audits will allow CN to monitor progress and identify opportunities to tailor education campaigns to have the most impact on our community.
An ambitious target **of 80% recovery rate** and halving organic waste sent to landfill by 2030 has been set. This includes a **50% reduction in organics to landfills by 2030** and a mandate for specific businesses to divert food waste by 2025. Our current municipal recovery rate sits at around 40%.	**Development of new resource recovery infrastructure at SWMC** A 'business as usual' approach will not allow SWMC to meet these targets and a multi-pronged approach is required. A MRF at SWMC will ensure we will always have a nearby location to process our recyclables. An Organics Facility at SWMC will ensure we will always have a nearby location to process Food Organics and Garden Organics (FOGO). This will further allow CN to meet the organics reduction target and improve the overall municipal recovery rate, by approximately 10-20%. Opportunity also exists to offer this service to businesses and other councils. **Collaboration with research institutions and industry in boutique resource recovery options** will further contribute toward our 80% target. For example, MICROfactories which disassemble and recycle problematic material streams such as e-waste.
Waste export ban of plastic, paper, glass and tyres by 2024 has prompted policy to focus on localisation of our supply chain by significantly increasing the use of recycled content by governments and industry, especially plastics.	**Collaboration and partnership to develop a Resource Recovery Hub at SWMC** Cross-collaboration with research institutions and industry is required to maintain and add value to processed recycled materials. As part of the CN's Economic Development Strategy, SWMC was identified as a key innovation precinct for circular economy activities. This will be further leveraged through continual support in the localisation of industry supply chains.
Implementation of new initiatives, services and infrastructure requires funding.	**Access to financial support to achieve Federal and State targets and outcomes** The Federal Government will invest $190 million into the Recycling Modernisation Fund. This will leverage over $600 million of recycling infrastructure investment and drive a billion-dollar transformation of Australia's waste and recycling capacity. The Recycling Modernisation Fund will support investment in new infrastructure to sort, process and remanufacture materials such as mixed plastic, paper, tyres and glass. CN was awarded $5M towards the construction of a MRF via Remanufacture NSW which is co-funded by the Federal and NSW governments. There are funding opportunities accessible to support a broad number of initiatives. There is also an opportunity to continually investigate and secure funding to support new initiatives, services and infrastructure. **Hypothecation of the S88 Waste Levy back into waste and resource management infrastructure and activities** rather than consolidated revenue will secure dedicated ongoing reinvestment. CN, over the past ten years, has paid $270M in Waste Levy and has only received $6.5M, or 2%, back in funding.
Waste Services operates in a **highly regulated environment** due to the nature of its operations.	**Continual review of operations to prioritise people and the environment is required within the Waste Industry** Waste business must ensure that risk management systems that are in place are fit-for-purpose and well-adopted by the organisation.

3 CN and Regional Needs

Our community in Newcastle, and the Hunter region, are growing. It is important that we plan not just to meet our current needs and aspirations, but also to support future population growth and economic development.

As a region we face common problems around waste management and resource recovery; but collectively we can meet State and Federal government targets which creates positive market transformation. This will improve the value to our environment, community, and economy.

City of Newcastle's (CN) recyclable recovery rate is 40.5%, while the Hunter's average recovery rate is 43.3%. Our region will need to find ways to improve its ability to recycle, by approximately 40%, if we are to meet the Federal and State target of 80% by 2030.

CN has gained insights auditing our waste and recycling streams to provide us with a roadmap to improve our recycling.

To meet our targets, CN will need to aggressively pursue a combination of solutions. This includes optimising our current services by reducing contamination of our recyclables, stopping recyclables leaking into our residual waste, introducing new services such as FOGO (Food Organics Garden Organics) recovery, and investigating new innovative technologies to recycle materials currently being sent to landfill.

We have listened to our community and can meet the community's aspirational goals and support the region through:

- Providing new and innovative services to increase resource recovery
- Providing local solutions to our waste
- Building future resilience
- Transitioning Summerhill Waste Management Centre to a Resource Recovery Hub.

Regional Snapshot

Between 2001 and 2017, the population of the region grew from 628,000 to just over 730,000[23]. The five lower Hunter Councils are predominantly driving this growth and have the greatest influence on the population and economic growth across the region. Over the next 20 years (2021-2041)[24] the:

- Hunter Region population will grow by 14.8% leading to a 13.9% increase in waste generation
- Newcastle's population will grow by 15.7% leading to a 17.9% increase in waste generation

Population growth and a prosperous economy are intrinsically linked to waste generation. More people means more waste generated and a more prosperous economy means this waste generation is not just contained to the residential household waste streams but across all sectors; construction, commercial, retail and industrial.

When it comes to municipal waste and resource recovery, the two key indicators to consider are the total amount of waste that is being generated and how much of it is being recovered. The following table show waste generation and recovery rates across the Hunter Region. There are several things to note from this information:

- Newcastle is the sixth-highest waste generator, by household, in the Hunter (out of 10 councils) and has the fourth lowest recycling rate
- The council with the highest recovery rate, Lake Macquarie, is the only council to have a FOGO service
- The councils with the lowest recovery rate do not have a green-bin garden organics collection service.

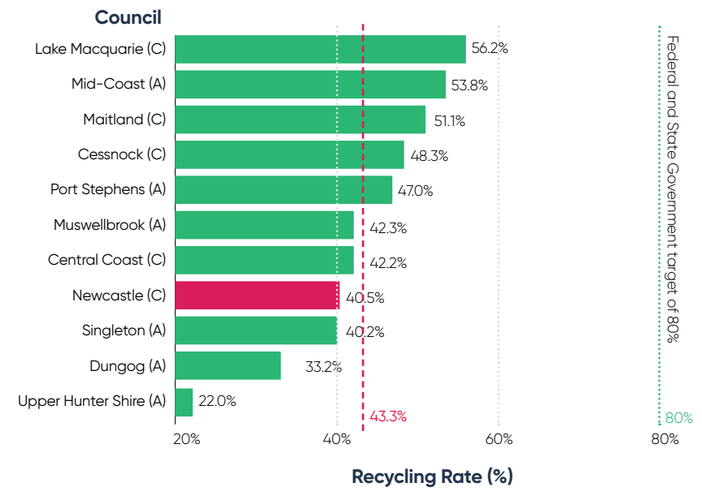
[23] ABS.Stat, ERP by LGA, Age and Sex, 2001 to 2017
[24] DPIE (2019) Population, Household and Implied Dwelling Projections; https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections

Table 3: Regional Local Government Area performance

LGA	Kg per HH/wk	Kg per Capita /wk	Recycling Rate
Greater Newcastle			
Cessnock (C)	19.94	9.32	48.3%
Lake Macquarie (C)	25.31	9.9	56.2%
Maitland (C)	26.25	10.45	51.1%
Newcastle (C)	23.12	9.39	40.5%
Port Stephens (A)	24.71	12.28	47.0%
Greater Newcastle	**23.87**	**10.27**	**48.6%**
Upper Hunter and MidCoast			
Dungog (A)	19.7	10.97	33.2%
Mid-Coast (A)	23.25	13.25	53.8%
Muswellbrook (A)	19.79	9.68	42.3%
Singleton (A)	20.48	9.75	40.2%
Upper Hunter Shire (A)	**11.14**	**6.17**	**22.0%**
Upper Hunter and MidCoast	**18.87**	**9.96**	**38.3%**
Hunter Region	**21.37**	**10.12**	**43.5%**
Central Coast and Hunter Region			
Central Coast (C) (NSW)	34.26	13.31	42.2%
Central Coast and Hunter Region	**22.54**	**10.41**	**43.3%**

Source: EPA Waste Data Survey 2018-19

Figure 2: Regional LGA performance



NSW municipal recycling rates have plateaued at **42%**

Source: EPA (2019) NSW Waste Sector Volume II: Situational Analysis

An important point to note from Figure 2 is that all councils need to make significant changes to their current recycling services to meet the Federal Government target of 80% resource recovery across all waste streams by 2030. To work towards achieving this, as a minimum, councils will need to introduce FOGO or other food waste recycling services, however this alone won't be enough to achieve the targets.

CN has developed a high-level road map of the steps required for CN to meet the targets set out in Federal and State government strategies.

Roadmap to 80% resource recovery

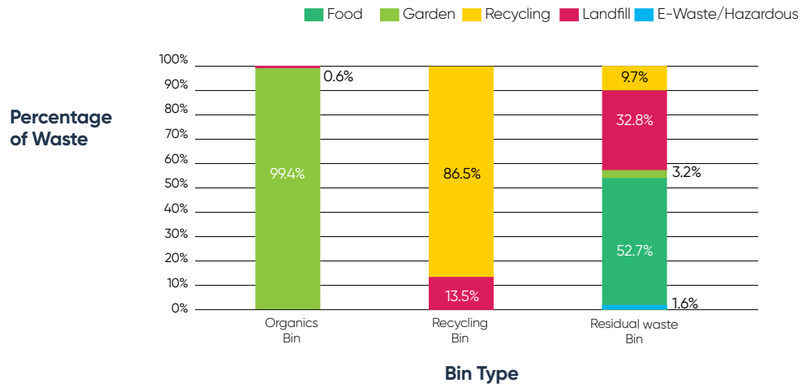
City of Newcastle (CN) periodically carries out audits of our bins to gain a better understanding of what our community is throwing away and how we can educate and improve our recycling practices and services. Figure 3 below summarises the results of our most recent kerbside waste audit in 2022.

The state-wide averages for contamination, or rejects, in the kerbside recycling and organics bins, are 10.6% and 1.8% respectively[25]. According to the audit data, CN's recycling contamination is higher than average, at 13%, while our organics contamination rate is significantly lower than the state average at 0.6%.

The audit data shows that over half of our waste in our general (red lid) waste bin has the potential to be recovered in a Food Organics and Garden Organics processing facility.

[25] EPA (2018-19) Local Government WaRR Data Report https://www.epa.nsw.gov.au/your-environment/waste/local-council-operations/local-council-waste-and-resource-recovery

Figure 3: Audit waste composition



Recognising that the Federal recycling target is 80%, our audit data, combined with our waste and recycling generation data, provides us with an indicative roadmap towards achieving this target, as shown on page 37.

While each state has been stepped out consecutively, we will need to pursue a range of solutions, simultaneously, to achieve the Federal target by 2030.

Impacts of COVID

While COVID-19 has reduced waste generation from offices and retail, this has been offset by increased residential waste generation. This is considered to be a short-term trend, although the possibility of sustained work from home may see a more permanent but marginal change from the previous long-term trends.

Regular waste audits will enable CN to identify and monitor trends in waste generation and recycling as we move towards a 'new normal' and to transition services and infrastructure as needed in response.

40.5%

Current State
- Current Recovery rate has been adjusted to remove contamination through primary processing.
- Better at home segregation can remove contamination before it gets to the facility creating better recyclable outputs and reducing processing costs.

47%

State 1: Capture Recyclable Leakage from Residual Waste
- If we capture all the recyclable and garden organics leakage from our red-lid bins it can contribute to 6.5% increase in our recycling rate.

62.5%

State 2.1: Capture 50% of FOGO from Residual Waste
- If we can capture all recyclables (state 1) and 50% FOGO (federal target) leakage from residual waste stream it can contribute to a 22% increase in our recovery rate.

This will be our short-term target implementing the new organics facility.

73.2%

State 2.2: Capture 100% of FOGO from Residual Waste
- If we can capture all recyclables (state 1) and 100% FOGO leakage from residual waste stream it can contribute to a 32.7% increase in our recovery rate.

This is an aspirational target. Studies by the Victorian EPA state that 20% of residents will never adopt this service.

80%

State 3 (Federal Target): Explore Boutique Solutions for Additional Recovery from Residual Waste
- If we are able to capture all recyclables and FOGO leakage from our residual waste stream we will still be short by approximatively 7% to meet the target.
- Innovative solutions will need to be investigated and deployed to further improve recovery in our residual waste stream.

The solutions CN will use need to be a combination of:

- **Infrastructure and services:** Ensuring the availability of infrastructure and services to allow for resource recovery and processing of high-value outputs
- **Education and behaviour change:** An ongoing program to promote uptake and responsible use of the services available

Table 4: High-level improvement roadmap

	Infrastructure and Services	Behaviour Change Campaigns
Current State	Access to advanced MRF that can process yellow-lid bin material to 99% purity.	Reduce contamination from yellow-lid bin
State 1: Capture Recyclable Leakage from Residual waste		Reduce recyclables and garden organic leakage in the red-lid bin
State 2.1: Capture 50% of FOGO from Residual waste	Access to organics facility that can process Food Organics and Garden Organics.	Introduce Food Organics recovery (FOGO service) to residents
State 2.2: Capture 100% of FOGO from Residual waste*		Improve uptake and reduce leakage of Food Organics recovery
State 3: [Federal Target] Explore Boutique Solutions for Additional Recovery from Residual waste	Co-location and partnerships with boutique recovery services and investigation and understanding of the role of Waste to Energy.	Waste reduction campaigns. Access to boutique recovery services.

* This is an aspirational target. Studies by VIC EPA state that 20% of residents will never adopt this service.

Infrastructure Needs

Research has been conducted by the NSW Government[26] and our region to understand our waste and recycling infrastructure needs. The following key infrastructure has been identified to ensure our core kerbside waste and recycling services are secure for the future.

Material Stream	Hunter Region Capacity Gap and Infrastructure Need	Reason
Mixed Recycling	Current Infrastructure requirements. Either: • CN only MRF, or Transfer Station, to process ~20,000 tpa. • Hunter region MRF to process 60,000 tpa to 70,000 tpa.	• China National Sword Policy and COAG Export Ban. • Closure of Gateshead MRF. Currently, there are no MRFs in the Hunter region. All Hunter councils transport their materials to the Central Coast or to Sydney.
Organics	Infrastructure requirements by 2030 for the Hunter as identified in the *NSW Waste and Sustainable Materials Strategy A guide to infrastructure needs*: • 1 x small In Vessel Composter (IVC) (20,000 tpa) or 1 x medium outdoor aerated compost (FOGO, minor FO) (10,000 tpa to 50,000 tpa). • 2 x medium IVC (20,000 tpa to 70,000 tpa per site) or 2 x large outdoor aerated compost (FOGO, minor FO) (>50,000 tpa per site). • 2 x medium AD (FO) (30,000 tpa per site).	• Federal and State governments target of 80% recycling and 50% food waste diverted from landfill. • The NSW EPA, in October 2018, revoked the exemption for mixed waste organic outputs (MWOO) application for land. An estimated additional 176,000 tpa of processing capacity for organic material will need to be reconfigured from Alternative Waste Technology to FOGO facilities. • Councils are to provide kerbside FOGO services to all households by 2030. • Selected commercial food businesses are to implement food organics recovery by 2025. • The NSW Government estimates that 1.1 million tpa in FOGO/FO processing capacity will be required (capacity deficit) to service metropolitan areas including Greater Newcastle.
Residual waste	As identified in the *NSW Waste and Sustainable Materials Strategy A guide to infrastructure needs*: Additional landfill capacity to accept >300ktpa or a medium-scale energy recovery facility by 2040.	• Regional population and economic growth.

LEGEND
AD: Anaerobic Digestion
COAG: Council of Australian Governments
FO: Food Organics
tpa: tonnes per annum

[26] DPIE, NSW Waste and Sustainable Materials Strategy: Future Infrastructure Needs

Newcastle is the primary gateway to the Hunter, linked to the rest of the region and beyond due to our connection with major road networks including the M1 and Hunter Expressway. SWMC has adequate space and is in a strong position to provide regional solutions for waste and resource recovery for the Hunter.

CN consulted with local councils and private sector waste collectors/processors[27], to determine the feasibility of SWMC becoming a Resource Recovery Hub that provides regional resource recovery solutions. CN found:

- Other Hunter councils want a local/regional solution for their recyclables, rather than sending material outside our region.
- There is limited processing infrastructure in the region which poses sole dependency risks, including:
  - High processing costs due to lack of competition
  - Having to find alternative solutions at a potentially much greater price should the infrastructure fail or the organisation go out of business
  - Having to send recycled material to landfill should the infrastructure fail or the organisation go out of business.
- There is significant consideration around logistics. Transporting material large distances is not economical and will necessitate the use of a transfer station for bulking of material and long-hauling. This adds significant operational expense.
- Any regional solution should be a trade-off between the volume of recyclable material and the distance it has to travel. In short, the overall volume of waste should be travelling the least distance. City of Newcastle's SWMC was considered to be consistent with this approach.

[27] CN (2021) Internal Unpublished Document

> Regional precincts that are located on arterial transport routes have enormous potential to become circular economy precincts, where energy recovery sits at the centre of a network of complementary industries that can create jobs and drive innovation.
>
> Source: EPA (2021), Energy from Waste Infrastructure Plan

Cleaning Up Our Act: The Future for Waste and Resource Recovery in NSW (March 2020)

The NSW Government, in its Issues Paper, notes that land for waste and resource recovery infrastructure needs to be planned, retained and managed. While these are essential services, the industry and local councils have reported it is becoming increasingly difficult to find appropriate land to build waste and resource recovery infrastructure. Even when land is identified, urban encroachment, negative public sentiment towards facilities, and competition for commercial and industrial sites make it increasingly difficult and expensive to secure land for waste and recycling facilities.

City of Newcastle has an ideal site at Summerhill Waste Management Centre that is in close proximity to our population, however it is suffering from urban encroachment as our population grows. This site needs to be protected to ensure future security of our waste and recycling services at a low cost to residents.

Listening to Our Community

Valuable feedback from our community over the last five years has told us that residents think that reducing waste, increasing recycling and moving towards a circular economy is important. The following summarises the key community feedback CN received[28].

Our Key Projects

Percentage of residents support:

FOGO
77% of residents would be very likely to separate their food if Council introduces FOGO

Green Energy
Generate green energy (from our organics for example) to power a local recycling facility - 95%

MRF
Develop a Materials Recycling Facility (MRF) - 98%

Soft Plastics
Recovering soft plastics through yellow bins - 90%

Textiles
Recovering textiles through yellow bins - 98%

SWMC Access
Improved access at SWMC - 87%

Tip Shop
92% support Tip Shop to divert and sell re-useable items

[28] City of Newcastle (2020) Waste Research Report

Education and Behaviour Change

98% of residents support education programs that empower the community to produce less waste, recycle properly and reduce waste to landfill.

Our residents also suggested that we could develop new waste and recycling awareness programs about:

- Organic and food compost
- Appropriate types of waste to go in each of the three kerbside bins
- Soft plastics waste management

CN is not alone in having residents looking for more information on these types of waste. Hunter Joint Organisation also has reported that it sees a need for more information and better programs for:

- Bulky waste
- Textiles
- Soft plastics

Strategic Input

Percentage of residents support:

Research
Partnering with university to divert waste and new product uses for recyclables - 84%

Responsibility
Personally responsible for waste management - 84%

Innovation
Innovative technologies that reduce waste to landfill - 98%

Circular Economy
Circular economy at SWMC including light intensity business - 91%

Recycling
Recycling is important - 98%

Partnerships
Partner with other councils - 90%

Commercial
Recognise the value of the resource - take a more commercial approach - 88%

Summerhill
Maximise the life of SWMC - 93%

Challenges and Opportunities

Challenge	Opportunity

City of Newcastle will need to **improve recovery by 40% to meet the 80% resource recovery State and Federal target.**	**Multiple solutions will need to be pursued** simultaneously including:
	• Development of a **Behaviour Change Strategy** with a focus on;
	  • Reducing contamination in the yellow-lid bin,
	  • Reducing recyclable leakage in the red-lid bin
	  • Maximising adoption of Food Organics recovery (when the facility is operational)
	  • Waste reduction campaigns, and
	  • Education around access to boutique recovery services.
	• Investigation and **development of new infrastructure** and services, such as;
	  • An advanced MRF capable of processing material with up to 99% purity,
	  • Food Organics capture through our green-lid bin service,
	  • Boutique infrastructure, technology or services to recover material that would traditionally end up in a landfill.

Significant need for organics solutions in Hunter region driven by state targets, that apply to councils and commercial food businesses, and the revoking of MWOO exemptions.	**City of Newcastle is currently developing an IVC (in vessel composting) organics processing facility.** Further assessments of the market should be conducted to understand the capability to cater for more feedstock. The community has also been supportive of generating green energy. Anaerobic Digestion, which generates green energy through the processing of organic material, should also be explored to potentially cater for commercial food diversion in the region.
The average recovery rate for the Hunter Region is 43%. City of Newcastle and the region face similar waste and resource recovery issues around lack of infrastructure.	City of Newcastle can either invest in infrastructure to meet the city's needs or further **investigate opportunities for regionally designed solutions.** A regional solution can result in reduced lifetime cost to our residents for the service, improved localisation of output feedstocks, and overall improved environmental outcomes for the region.
Existing waste and recycling services will not achieve the Federal and State targets. To achieve an 80% resource recovery target additional, innovative solutions will need to be developed for streams that are traditionally difficult to recover.	**Boutique infrastructure, technology or services to recover material that would traditionally end up in landfill should be investigated and piloted**. Including: • Delivery of workshops to increase the maximum life of products, such as furniture repair • Social enterprise programs, such as a tool share program • Development of boutique resource recovery opportunities that would benefit from proximity to source materials, such as mattress recycling, e-waste recycling • Understanding the role of Energy from Waste • Innovation hub for research and collaboration with Universities • Collaboration with other Hunter Councils, State and Federal Governments, industry experts, and universities to identify solutions and promote circular innovation is important.
SWMC currently only has one access road, via Minmi Rd Wallsend and Fletcher.	**A secondary access road connecting the site to Newcastle Link Rd has been proposed** and is being investigated to reduce current and future traffic impacts caused by SWMC's operation. Logistics planning is required to support new resource recovery infrastructure to balance customer needs, environmental impacts and community amenity impacts in the suburbs neighbouring Summerhill.

4 CN Waste Services Capability

- CN currently offer our residents a three-bin waste and recycling collection service, a bulk waste service, options to safely dispose of household problem wastes and public place waste and recycling infrastructure
- Summerhill Waste Management Centre has primarily operated as a landfill, with limited resource recovery activities on-site, however steps have been taken to secure and localise our three-bin waste and recycling service at SWMC through an Organics Processing and Materials Recovery Facility
- With the changes in markets and policy, we have many opportunities open to us to reduce the amount of waste landfilled and increase resource recovery and recycling through new infrastructure and services
- The ample land and prime position of SWMC makes it the ideal location to transition away from 'just a landfill' to a Resource Recovery Hub, which will have social, environmental and economic benefit to our community and the region.

Waste and Recycling Collection Services

over 7 million
collections from households and businesses per annum

16,402
tonnes of garden organics in 2020/21[29]

15,378
tonnes of recycling in 2020/21[29]

50,840
tonnes of residual waste in 2020/21[29]

CN deliver a three-bin kerbside collection system for residential properties in Newcastle as part of our standard rateable entitlement, with weekly collections for residual waste and alternating fortnightly collections for recycling and green waste.

Residents can access additional bins and collections for an added cost if required.

Kerbside Collection Services

Residual Waste
Collected weekly
Taken to SWMC for landfilling

Recyclables
Collected fortnightly
Taken to SWMC where it is bulk loaded for transport to a third party MRF for processing at cost

Organics
Collected fortnightly
Taken to SWMC where it is shredded on-site before being transported to the Hunter Valley for mine site rehabilitation at cost

[29] EPA (2020-21) Local Government WaRR Data Report

Bulk waste service

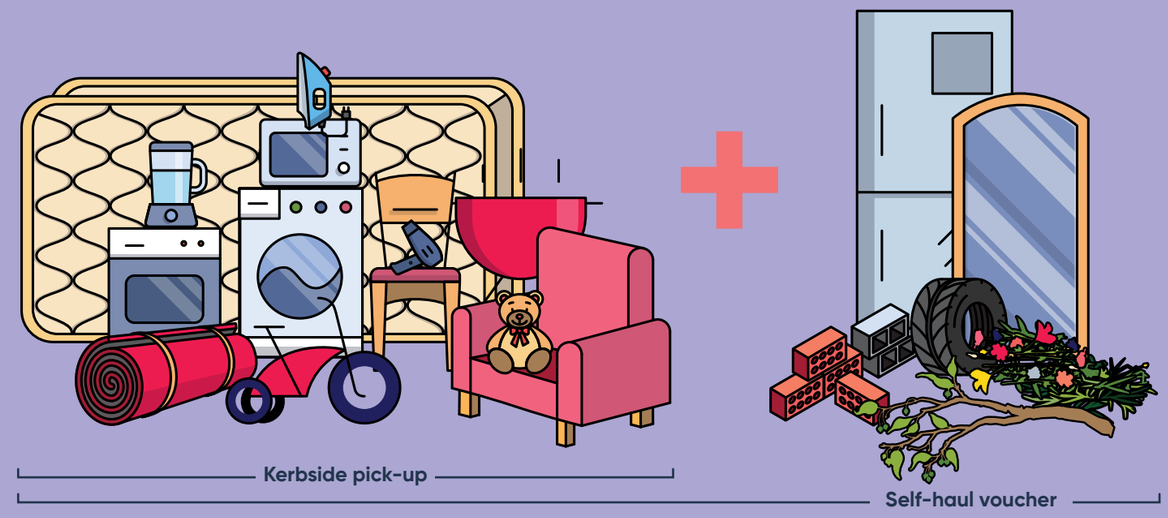
2,800
tonnes collected per annum

CN offers residents a free bulk waste service for those household items which are too big to dispose of through the kerbside collection service. Residents can choose between a booked kerbside collection or a self-haul voucher which enables them to bring their waste to SWMC at no charge. A self-haul voucher provides residents with the opportunity to dispose of a wider range of items than a kerbside collection, as well as enabling residents to dispose of their items at a time convenient to them.

Residents can request two vouchers or two kerbside pick-ups in any rolling 12-month period[30], or one of each option, to dispose of up to two cubic metres of domestic waste per service.

[30] Rolling twelve-month period means if you booked a service in November 2020 and another service in April 2021, you will be entitled to your next service from November 2021

Bulk Waste Services



Household problem waste service

Household problem wastes are potentially harmful household products that should not be disposed of through our household kerbside bins. They include items such as paints and oils, cleaning products, pool chemicals, garden herbicides and pesticides, and hobby chemicals.

Many of these items can be recycled and turned into a new product or used in other ways if they are correctly disposed. We provide three services for residents to safely dispose of their household problem wastes for recycling or safe disposal

Community Recycling Centre (CRC)	**Chemical CleanOut Event**	**Community Recycling Stations (CRS)**
Located at SWMC this is a drop-off facility open year-round	An event-based service, currently offered twice per year in Newcastle.	Located at several Libraries and Council buildings. Permanent drop-off for smaller, less toxic household problem wastes
Accepts: • Paint • Gas bottles • Motor and other oils • Car batteries • Household batteries • Fluoro light globes and tubes • Fire extinguishers • Smoke detectors	**Accepts:** • The same items as accepted at the Summerhill CRC • Automotive chemicals (eg, coolant) • Garden herbicides and pesticides • Pool cleaning chemicals • Hobby chemicals	**All CRS accept:** • Household batteries • Reading glasses (no sunglasses) **Depending on location accepts:** • Fluoro globes (no tubes) • Mobile phones • Printer cartridges • X-rays
More information: Summerhill CRC	**More information:** Household Chemical CleanOut	**More information:** Community Recycling Stations

- **Paints** are mixed with other waste solvents and used as an alternative to fuel in cement kilns. The metal containers are recycled
- **Lead acid batteries** are sent to recyclers where the lead, acid and plastic are recovered and recycled
- **Gas bottles** have the residual gas captured for reuse. Undamaged bottles are re-tested, re-stamped and returned to the hire industry. Damaged bottles are punctured and recycled as scrap metal
- **Used oils** are processed to become a lubricant or used for waste to energy
- **Fluorescent tubes and globes containing mercury.** The mercury is removed through processing and sold for a range of industrial uses. The metals are also recycled

Chemical CleanOut event

Community Recycling Centre at Summerhill Waste Management Centre

The CRC and Chemical CleanOut events are delivered in partnership with the NSW EPA and are available to all NSW residents. The Community Recycling Station service is available for Newcastle residents only.

Community Recycling Station locations

You can drop off the following household items for free, at these local facilities.

	Household batteries	Eye glasses	X-rays	Ink cartridges	Fluoro globes (no tubes)	Mobile phones
Beresfield and Stockton Library	✓	✓	✓	–	–	–
Newcastle and New Lambton Library	✓	✓	✓	–	–	–
Wallsend Library	✓	✓	✓	✓	✓	✓
Newcastle Museum	✓	✓	✓	✓	✓	✓
Summerhill Waste Management Centre	✓	✓	✓	✓	✓	✓

Community Recycling Station at Walllsend Library

Community Recycling Station at Newcastle Library

Summerhill Waste Management Centre

Summerhill Waste Management Centre (SWMC) is a key asset for CN in the provision of waste services to our community and businesses.

SWMC is located on a former open-cut and underground mine, which operated until 1988. The site was acquired by Council in 1990 and since 1995, the site has been operated as a waste management centre.

SWMC is licensed under EPL 5897 and is permitted to dispose of 362,000 tonnes per year, with approximately 100 years of disposal life remaining.

A significant part of the cost of providing waste services to the community is in transport. A key part of the value that the SWMC affords CN, and the Hunter region, is its central location via the M1 and Hunter Expressway, its proximity to the population and its capacity. This translates to reduced transport emissions and costs.

Licensed for
362,000
tonnes per annum

265
hectares

Services over
115,144
customers per annum

While SWMC has operated primarily as a landfill, the site will be pivoting its operations to become a Resource Recovery Hub. The aim is to ensure the long-term security of our red, yellow, and green-lid bin services and create the best and highest value outcomes for our planet and economy.

Figure 4: A summary of waste and resource recovery activities that are currently and proposed to be carried out at SWMC.

Public place services, litter and illegal dumping

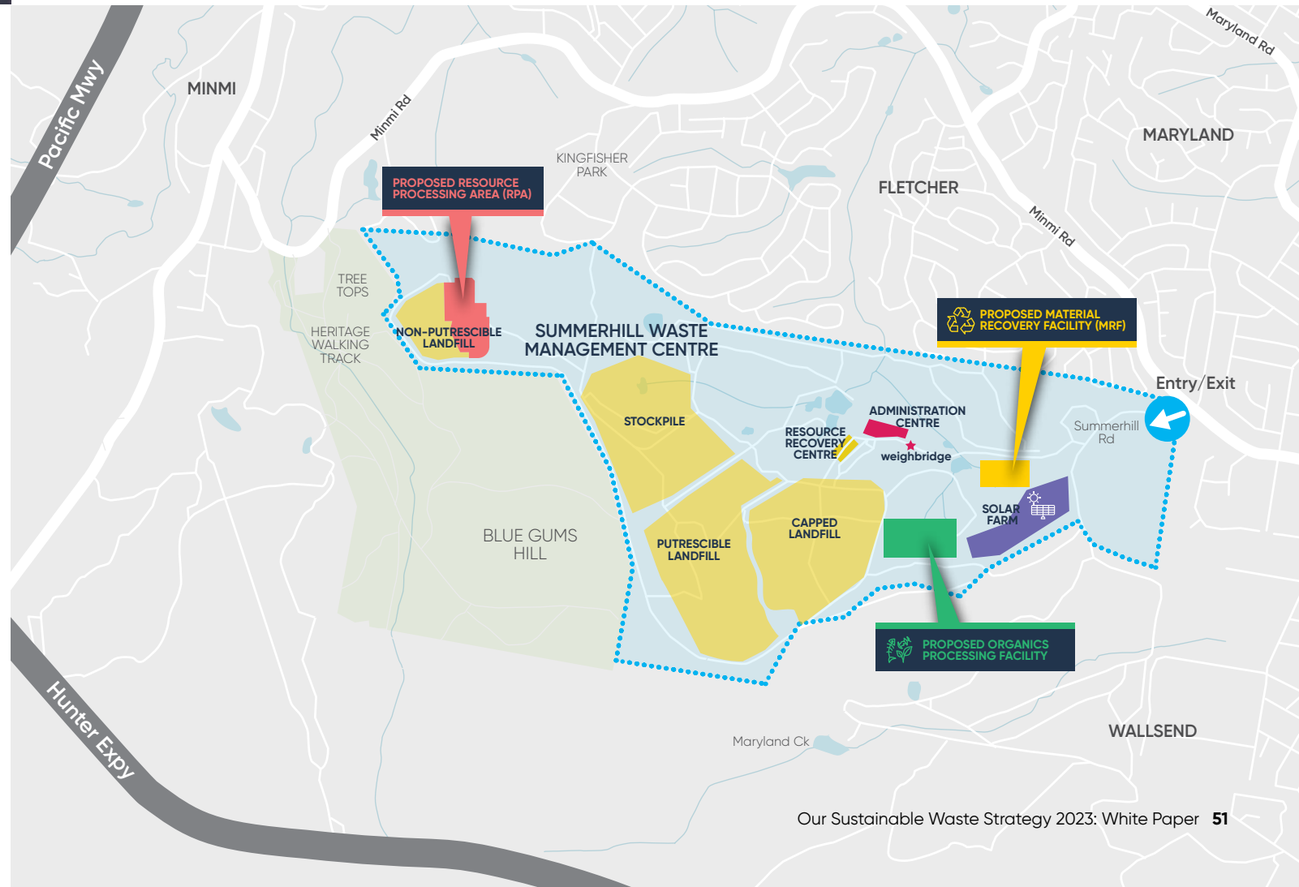
CN's public place waste and recycling infrastructure plays a critical role in improving environmental amenity, as well as providing residents with the opportunity to dispose of waste and recycling away from home.

Unfortunately, litter is still a widespread issue within the City. CN has operated targeted litter campaigns funded through the Better Waste and Recycling Fund; Throsby Creek Litter Management Project and the Throsby High Schools Marine Debris Program. Throsby Creek has a large catchment area situated near a large residential area. The nature of the currents means that marine debris enters the catchment and is combined with litter expelled via the stormwater system. The issue results in a loss of amenity for the Throsby Creek residential population. It also threatens the Carrington mangrove environment.

Illegal dumping relates to material that is larger than litter and most commonly, in Newcastle, includes green waste, household waste, mattresses, furniture, and whitegoods. There are limited incidences of asbestos dumping, which are typically small-scale and associated with kitchen and bathroom renovations. Illegal dumping occurs at parks, charity bins, public places and the kerbside, with several illegal dumping 'hot spots' in Black Hill, Stockton, Carrington, Cooks Hill, Carrington, Minmi and Steel River Industrial Estate.

Over 1,000
public place bins in Newcastle LGA

1,625
illegal dumping collections per annum



Resource Recovery

There are currently two key components to resource recovery operations at SWMC:

- Resource Recovery Centre (RRC) and
- Resource Processing Area (RPA).

Resource Recovery Centre

The RRC opened in September 2019 and is a "one-stop shop" for residents and small commercial customers dropping off their waste. In the first year of operation, the RRC recycled 3,100 tonnes, or the weight equivalent of 74 semi-trailers, of waste destined for landfill, whilst generating income of approximately $250,000 to offset the cost of running it. In addition, this initiative has saved over $450,000 in waste levy fees to the NSW EPA by recovering items for recycling, rather than disposal to landfill.

There are three zones to the RRC which maximise opportunities to recover as many resources as possible.

Sort and Save Service

The Sort and Save service allows Newcastle residents to drop off pre-sorted loads of eligible items at no charge. The items accepted through this service are paper and cardboard, household recyclable containers, scrap metal, e-waste[31], clean wood and soft plastics.

Community Recycling Centre

The CRC accepts household quantities, to a maximum of 20L or 20kg, of household problem wastes as shown on page 48.

Resource Recovery Area

Residents who have items not accepted through the Sort and Save or CRC services, or who do not wish to pre-sort their loads before arriving at the site, and small commercial customers, drop off their mixed waste loads on our sorting floor.

Staff and machinery sort out reusable and recyclable materials from the mixed waste.

CN also have a contractor on-site who recovers reusable items, such as good quality furniture, bikes, toys and books, to sell through their reuse shop.

[31] Up to 10 items per residential customer per visit

Reprocessing Area

The reprocessing area is set aside for large and bulky recyclable items, such as scrap metal, mattresses, bricks, tiles and concrete, clean wood waste and garden organics.

- Bricks, tiles and concrete are crushed to produce aggregate for road construction on site and civil projects across the city
- Clean wood waste is shredded and sent to a local energy producer to use as a substitute for coal in the generation of electricity
- Mattresses and tyres are stockpiled until there is sufficient quantity to send to a third-party processor, who extracts the scrap metal and other recyclable components from these items
- Scrap metal is sent for recycling
- Garden organics are shredded on-site daily and then transported to the Upper Hunter Valley for use in mine site rehabilitation

Food Organics (planned facility)

CN is developing an Organics Processing Facility at SWMC. Once complete, the facility will be able to process up to 50,000 tonnes of Food and Garden Organics (FOGO) per annum. While the city already recovers Garden Organics, there is an opportunity to recover Food Organics from our residual waste bin. This will allow us to:

- Divert 24,000 tonnes of Food Organics from landfill
- Create a saleable compost material that can generate significant revenue over the life of the facility
- Increase our Domestic Resource Recovery Rate by 15%
- Reduce our GHG emissions by 24,000 t CO_2-e

Photo: Sort and Save at Summerhill Waste Management Centre (CN 2020).

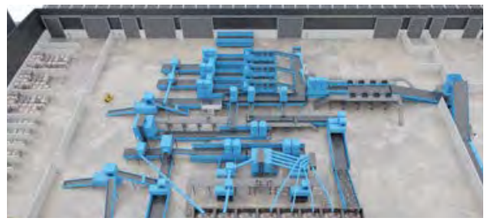
Materials Recovery Facility (planned facility)

To provide certainty of service continuity, and to reduce the ongoing costs associated with transporting our recyclables outside of the region, CN is intending to construct a MRF at Summerhill Waste Management Centre. This facility will sort the recyclables collected in our yellow lid recycling bins into single material streams, which will then be sent to domestic manufacturers for processing into new products.

Some of the benefits[32] include:

- A local facility would significantly reduce associated recyclables transport costs
- Process 35,000-tonnes of material per year with the ability to grow to 85,000 tonnes
- Generate significant revenue over the life of the facility.

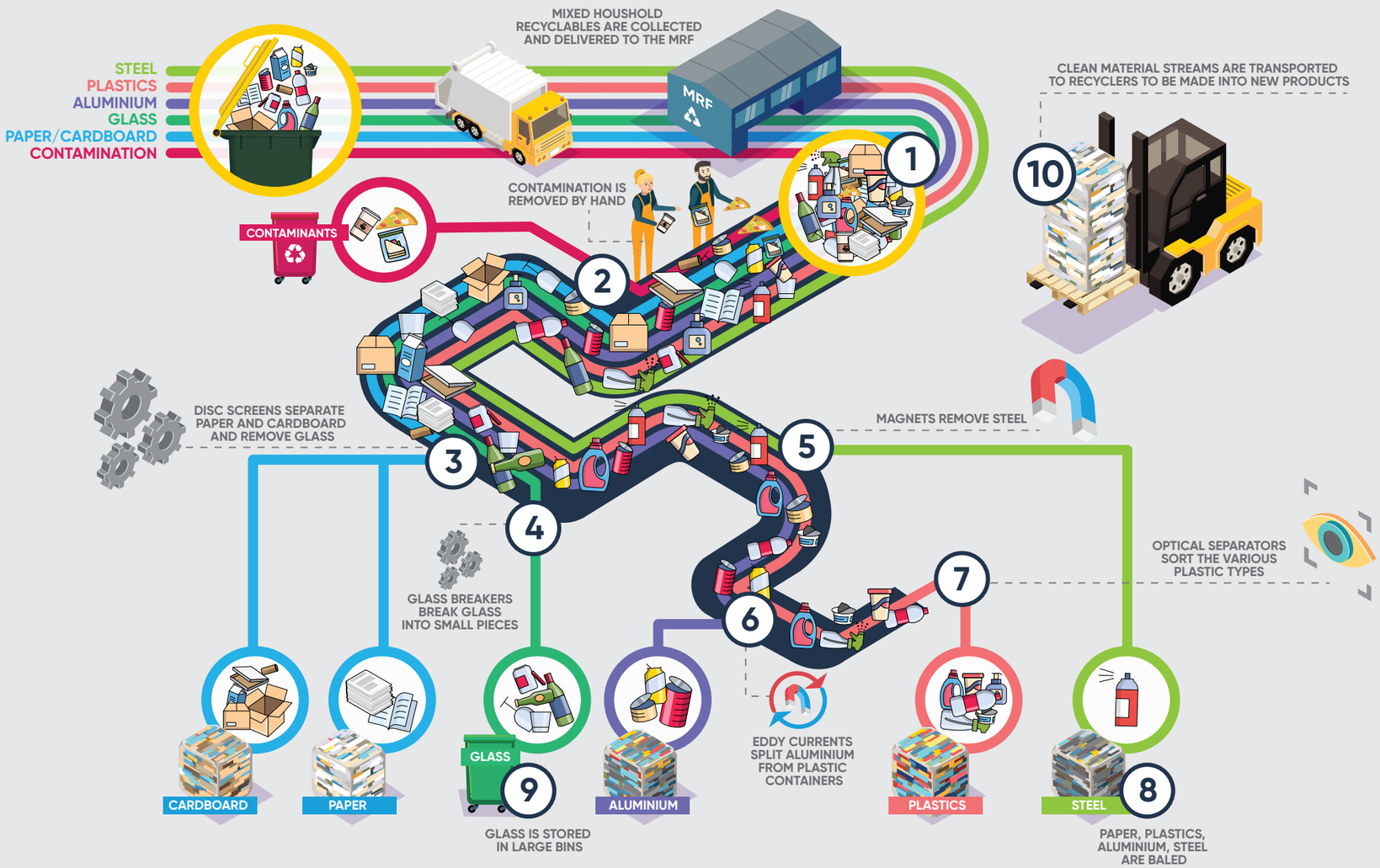
[32] CN commissioned CBA Study



Layout of a Material Recovery Facility: A network of conveyors move the mixed recyclables through a series of equipment that sort the mixed recyclables into individual material streams.

Separated recyclables (paper, cardboard, plastics, glass, aluminium and steel) are stored in bays until they can be transported to various recyclers to be made into new products.

MRF processing



1. Mixed materials arrive and are loaded on to the conveyor in the receival area
2. Contamination is removed by hand
3. Disc screens separate paper and cardboard and remove glass
4. Glass breakers break glass into small pieces
5. Magnets remove steel
6. Eddy currents split aluminium from plastic containers
7. Optical separators sort the various plastic types
8. Paper, plastics, aluminium, steel are baled
9. Glass is stored in large bins
10. Clean and separated materials are transported to recyclers to be made into new products

Landfill

The purpose of a landfill is to provide a final destination for materials that cannot be reused, recycled or recovered.

Landfilling has historically been the primary activity at SWMC. There is a putrescible landfill and a non-putrescible landfill. Waste that includes food and organic material, such as kerbside residual waste and mixed commercial waste, is disposed of in the putrescible landfill. Dry waste streams such as construction and demolition waste are disposed of in the non-putrescible landfill.

Although CN is in a unique position to have close to 100 years of landfill capacity, it is important to ensure that sufficient capacity remains on an ongoing basis and that associated infrastructure is available to maximise the life of the landfill.

In 2021/22, the City invested $6 million[33] to proactively manage and prevent pollution of water and leachate. An ageing site and increased incidences of unseasonable wet weather events have contributed to a review and investment in environmental improvement projects to ensure the longevity of SWMC.

City of Newcastle

[33] https://newcastle.nsw.gov.au/about-us/news-and-updates/latest-news/environmental-upgrades-underway-at-summerhill-wast?feed=news

Energy

While SWMC is predominately a Waste and Resource Management operation, the site is also a significant energy producer. There are plans to investigate the expansion of energy generation at SWMC and powering infrastructure behind the meter.

Solar Farm

Our five-megawatt solar farm, comprising 14,500 solar panels, is constructed on a closed, non-putrescible landfill site at SWMC. In the first six months of operation, the solar farm generated more than $420,000 in revenue[34].

Landfill Gas Management

SWMC has two 1.1 MegaWatt LMS landfill gas generators on-site. Landfill gas, which comprises a mixture of carbon dioxide and methane, is generated when organic material such as food waste, paper and cardboard and vegetation decomposes in the landfill. There is a network of pipes through the landfill, which are constantly drawing this landfill gas into the two generators, where it is turned into renewable energy.

Benefits per annum[35]

MWH Exported	17,000 MWH
Gas Extracted	11,050,000 m^3
Carbon Abated	107,800 CO_2-e
Homes Powered	3,000 per year
Water Saved	37,400,000 litres

[34] Source: https://newcastle.nsw.gov.au/about-us/news-and-updates/latest-news/solar-farm-powering-city-operations-and-revenue
[35] Source: https://lms.com.au/projects

Providing Value for Money

The Domestic Waste Management Charge (DWMC) is charged against residentially rated properties in Local Government Areas (LGA) to provide domestic waste management services, such as the kerbside three-bin collection service, bulk waste collection, and waste education. The amount charged is based on a cost-recovery model. CN offers the lowest DWMC in the Hunter region by optimising its waste and resource recovery infrastructure.

The highest costs to Waste Services operations include:

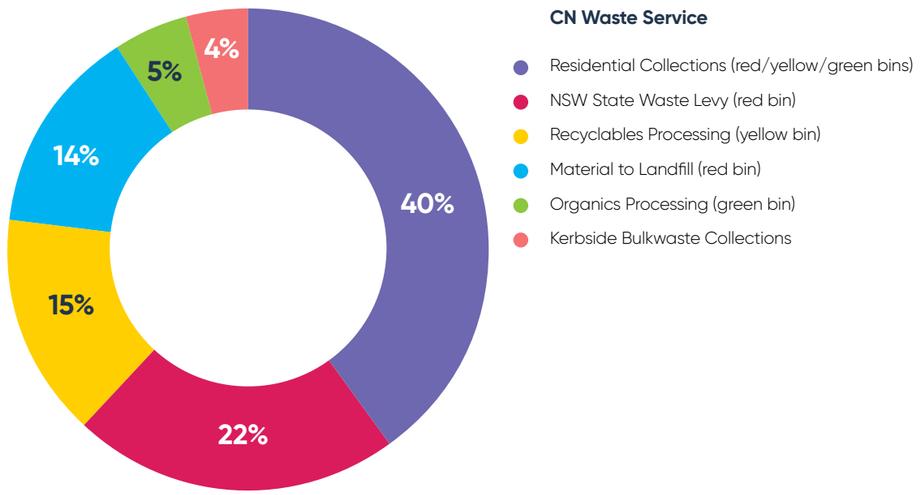
Collection services	40%
Paying the Waste Levy to EPA	22%
Processing of recyclables	15%
Landfill disposal	14%

CN is exploring opportunities to optimise the delivery of the services it provides which include:

- Operational improvement projects
- Modernisation of business systems
- Investment in new infrastructure

Any future CN service change and investment in infrastructure will always consider a balanced approach of value for money to our residents and improved services.

Figure 5: Percent breakdown of operational costs in DWMC



Customer Satisfaction and Service Levels

City of Newcastle puts customer experience at the forefront by committing[36] to:

A customer-led culture
Build a culture that encourages empathy, understanding and willingness to work alongside customers and colleagues

Service management capability
The growing capability to manage expectations and deliver what we promise

Digitised services and ways of working
To empower customers and staff

Co-designed innovative services
with the community that anticipates and improves customers' lives

Residents are overwhelmingly happy with CN's Waste Services, however, there are several services that some residents are unaware they can access such as the Community Recycling Centre and the Sort and Save facility. CN recognises further work is required to promote existing services to give residents the full opportunity to participate in resource recovery.

There are also several areas where CN is unaware of customer expectations, this includes expectations for CN and commercial customers coming to SWMC. CN will need to consult with the community and customers to determine acceptable service level expectations.

CN asked residents about their satisfaction across several services[37].

Table 6: Resident satisfaction and awareness

Service	Satisfaction Level	Awareness of Service
Kerbside red, yellow, and green lid bin	97-98%	High
Kerbside bulky waste collection	90%	Moderate
Bulk waste self-haul voucher	85%	Moderate
SWMC Community Recycling Centre	90%	Low
SWMC Sort and Save	88%	Low

Low: 0-3 out of 10 residents aware
Moderate: 4-7 out of 10 residents aware
High: 8-10 out of 10 residents aware

Customers surveyed at SWMC[38] expected to wait no more than:

5min — 5 minutes during **non-peak** times to enter our site

10min — 10 minutes during **peak** times to enter our site

[36] City of Newcastle (2021) Customer Experience Strategy
[37] City of Newcastle (2020) Unpublished - Community Survey Report
[38] City of Newcastle (2020) Unpublished - Weighbridge Survey

Challenges and Opportunities

Challenge	Opportunity
CN has different systems for monitoring and evaluating the efficacy of its Education/ Behaviour Change projects – especially with litter and illegal dumping campaigns.	• **Improved monitoring and evaluation program** for Education/ Behaviour Change projects. • Collection of data about incidences of litter and illegal dumping before and post-intervention campaigns is important to understand the intervention's level of impact.
SWMC has operated primarily as a landfill, the site will be pivoting its operations to become a Resource Recovery Hub.	**Master planning of the site** to consider: • Core infrastructure (red, yellow, and green bin services) • Potential locations for co-located infrastructure that would support SWMC's industrial ecology • Internal road network and additional weighbridges to separate heavy and light vehicles to improve safety and efficiency • Planning for future landfill cells
Unrealised opportunities for resource recovery.	**Bulk Waste Collection Service** • Investigate the feasibility of sorting kerbside bulk waste collection loads in the RRC compared to the feasibility of segregated kerbside bulk waste collection (e.g. separate scrap metal, e-waste, other recyclable or reusable items from items genuinely requiring landfill and collect via multiple vehicles or multiple passes) **MRF** • Investigate opportunities to increase the types of materials collected as part of our Contract Renewal (e.g., soft plastics) • Investigate opportunities to increase the types of materials collected once our MRF is operational **Tip Shop** • Investigate the feasibility of a tip shop located at SWMC, where items dropped off by residents and collected through our bulk waste service can be diverted for reuse and resold to the public
Limited planning and resourcing for the long term have meant that environmental improvements have occurred on an ad hoc and as-needed basis. This has been exacerbated by ageing infrastructure and increased unseasonable wet weather events.	**Investment in an Environmental Improvement Program at SWMC** that meets regulatory requirements and contributes to the long-term environmental protection and enhancement of the SWMC site.
Unrealised opportunities for energy generation at SWMC .	• **Develop a Renewable Energy strategy** to consider powering future SWMC infrastructure and collection operations (i.e. garbage truck fleet powered by renewable energy generated at SWMC). • The community has also been supportive of investigating green energy generation through the processing of organic material (i.e. Anaerobic Digestion).

Challenge	Opportunity
Collections and processing/disposal operations are the largest cost to the business.	**Review non-value-added activities in the business to optimise service delivery.** A non-value-added activity can include inefficient collection routes, equipment down-time at SWMC, or high administrative activities. Review the business to understand where operations can be optimised through: • Operational improvement projects • Modernisation of business systems • Investment in new infrastructure Potential areas include: • Collections route optimisation program • Fleet management system to ensure 100% uptime • SWMC operational improvements at the landfill and RRC • Reduce wait times at SWMC
Current business systems limit further growth and diversification of services .	• **Implement fit-for-purpose business systems** to align our people, processes and infrastructure to ensure consistent service levels, improve governance and transparency, and deliver continuous improvement and excellence. • **Conduct a comprehensive asset audit and assessment** • **Review & improve our data management system** to ensure appropriate data governance and intelligent business reporting
CN have undertaken extensive consultation and improvement regarding our Customer Service Experience in resident's interactions with CN in general, however, this needs to be **further developed for Waste Services** due to the specific needs of our business operations and customers.	• **Establish a customer survey program.** • **Co-design innovative services** with our community that anticipates and improves our customers' lives. • **Digitise our services** and ways of working to empower our customers and staff. • **Grow capability** to manage expectations and deliver what we promise.
Lack of established service levels across programs and services. Including, but not limited to: • Collection services • Council drop-off services • Education programs • SWMC services	• **Community and customer consultation on service levels** across all relevant operations to establish a baseline. • Review and improve customer experience with our infrastructure at SWMC with a focus on accessibility and ease of use. • Reduce wait times at SWMC to access services (including before the weighbridge or while on site) • Review and optimisation of all our services;

5 Our opportunity

This White Paper (Appendix 1) provides an overview of:

1. Market drivers,
2. Policy drivers,
3. City of Newcastle and Hunter Region needs, and
4. Current service capabilities for waste and resource management.

This document raises numerous challenges and opportunities across each area.

City of Newcastle has prioritised 11 key challenges[39] that will be transformed into opportunities.

Each challenge has been linked with a Priority of the Strategy.

Challenge 1
Security around processing recyclable (yellow-lid) and organic (green-lid) materials locally

Challenge 2
Developing resilient local end-markets

Challenge 3
Funding our future

Challenge 4
Meeting ambitious waste and recycling targets

Challenge 5
Strategic direction and long-term planning

Challenge 6
Understanding customer expectations to deliver excellent customer service

Challenge 7
Engaging all residents and customers to change behaviours

Challenge 8
Managing our high-risk operation proactively, rather than reactively

Challenge 9
Fostering regional collaboration to create impacts at scale

Challenge 10
Realising the potential of renewable energy generation and usage

Challenge 11
Optimising our systems and processes to maximise value for our customers

[39] Our Sustainable Waste Strategy: Appendix 1: Summary of Key Challenges and Opportunities

City of Newcastle has summarised the current position of Waste Services through a SWOT[40] matrix.

The matrix will enable prioritisation of the actions within our Sustainable Waste Strategy and directly at Summerhill Waste Management Centre (SWMC) to respond to these elements and considers:

- How can we take advantage of our strengths?
- How can we moderate the impact of our weaknesses and ultimately resolve them?
- How can we capitalise on the opportunities?
- How can we address the threats?

Strengths	Weaknesses	Opportunities	Threats
Landfill capacity Landfill asset has almost 100 years of capacity at current throughput	**Historical business model** Business model historically focused on disposal rather than recovery	**Build long-term financial strength to future proof Waste Services** Transition SWMC into a financially stable business, creating long-term financial security for Waste Services and CN	**Urban encroachment** Future urban encroachment on SWMC may constrain further development of the site
Development potential SWMC site potential for development of additional infrastructure	**Lack of strategic direction** Historical lack of strategic direction for development and operation of site and CN waste operations	**Develop new business models** Develop new business models to generate value beyond landfill revenue at SWMC. Leveraging its competitive advantage through growth and diversification	**Competition** Competition from potential new facilities, including the introduction of Energy from Waste. This may divert revenue away from SWMC and block future opportunities
Strategic location SWMC site is at an excellent strategic location for the region in close proximity to the M1 and Hunter Express Way	**Poor data** Poor waste data and operations data management is a barrier to identifying opportunities for future improvements	**Opportunity to provide localised resilience** Limited processing infrastructure in region provides opportunity to build local infrastructure to provide long term regional resilience and reduce dependency on Central Coast and Sydney	**Highly regulated industry** Waste Services is governed by acts and regulations. Failure to comply places people, the environment, and the operation of the business at risk
Renewable energy SWMC site generates 7MW of renewable energy which can power future infrastructure behind-the-meter	**Council resource limitations** SWMC operational efficiency and development opportunities limited by Council budgets and resources	**Circular economy opportunities** Circular economy opportunities and colocation of facilities at SWMC	**End-markets for processed recyclables** Limited end-markets for processed recyclables and compost in region. Resilient, localised supply chains are a priority
Community support Community support for improving waste diversion and better waste management practices	**Poor recycling performance** High contamination and low capture of recyclables in kerbside yellow recycling bins. Low recovery of commercial waste (C&I and C&D). High State/ Federal targets of 80%	**Integrated systems** Development of integrated efficient and automated systems and processes in the operation of SWMC	**Climate change** Increased frequency and intensity of extreme weather events impacts waste generated after natural disasters and operations of SWMC
	Understanding customer expectations Limited customer service levels defined and measured. Limited ongoing engagement to understand customer expectations to achieve excellent customer service	**State and federal funding** State and federal funding to support capital investment of infrastructure	**Sole dependency risks** Limited processing infrastructure in region pose sole dependency risks

[40] Strength, Weakness, Opportunity, and Threat Matrix

Realising our Opportunities

This document explains our current position and achievements in waste and resource management across our operations and our community. This has demonstrated a number of opportunities for the City.

To realise these opportunities, CN has developed a **Strategic Framework** that will guide the future direction of Waste Services by defining our:

- 20-year vision
- Core operating pillars and priorities
- Key outcomes and success measures
- Long-term objectives

This will be further underpinned by a **Delivery Plan**, reviewed every 4 years, providing a roadmap on how we will deliver on the Strategy.

Appendix A

Glossary of Terms

Terminology	Definition
AD	Aerobic digestion
CEFC	Clean Energy Finance Corporation
CN	City of Newcastle
COAG	Council of Australian Governments
CRC	Community Recycling Centre
CRS	Community Recycling Station
CSP	Community Strategic Plan
DPIE	Department of Planning, Industry and Environment
DWMC	Domestic Waste Management Charge
EfW	Energy from Waste
EPA	Environmental Protection Authority
EPL	Environment Protection Licence
E-waste	Electronic waste
FO	Food organics
FOGO	Food Organics, Garden Organics
FTE	Full time equivalent
HJOC	Hunter Joint Organisation of Councils
HV	Heavy vehicle
IVC	In-Vessel Composter
KPI	Key Performance Indicator
LGA	Local Government Area
MRF	Materials Recovery Facility
MSW	Municipal solid waste
MW	Mega Watt
MWh	Mega Watt hours
MWOO	Mixed Waste Organic Outputs
Recovery rate	Recovery rate = total waste diverted to reuse & recycling/ total amount of waste generated
Residual waste	Waste which cannot be reused or recycled and is therefore destined for landfill.
Resource recovery	To remove/direct materials out of the waste stream to reuse, recycling, composting or energy generation
Reuse	Using materials more than once before recycling or disposing of them
RPA	Resource Processing Area
RRC	Resource Recovery Centre
SMA	Sydney Metropolitan Area
SWMC	Summerhill Waste Management Centre
SWOT	Strengths Weaknesses Opportunities Threats
The Strategy	Our Sustainable Waste Strategy
UNSW	University of New South Wales
Waste audit	The physical sorting and separation of waste into individual material types (e.g. aluminium) or product types (e.g. TV's) for the purpose of quantifying amounts of material or product
Waste avoidance	Not creating waste in the first place
WS	Waste Services

Appendix B

Summary of 11 Key Challenges to Opportunities

Challenge 1

Security around processing recyclable (yellow-lid) and organic (green-lid) materials locally

Challenge

Securing stable, local processing of recyclable and organic materials to:

- Meet the challenges of an unstable recycling market and closure of recycling facilities, including the only facility in the Hunter
- Ensure CN always has a location under our control to take our recyclable and organic materials to be processed
- Reduce the excessive cost and carbon emissions associated with long distance transport of recyclable materials for processing
- Support our community's stated desire to increase waste diversion and recycling, while keeping processing of recyclable materials local and developing a circular economy
- Capitalise on the investment and funding opportunities provided by State and Federal government to increase local recycling and manufacturing.

Opportunities

Development of a **MRF** with advanced processing technology at SWMC will:

- Provide CN with certainty of processing capability, reducing reliance on third party processors and the instability that comes from this
- Provide CN with economic benefit in the form of jobs and additional revenue
- Provide quality control of outputs resulting in higher quality recyclables and recyclables designed to meet local circular economy supply chains
- Enable CN to capitalise on the Federal G.overnment's Recycling Modernisation Fund to invest in recycling infrastructure

Development of an **Organics Processing Facility** at SWMC that will process both food and garden organics will enable CN to:

- Keep food waste out of landfill thereby reducing the loss of this valuable resource and reducing greenhouse gas emissions
- Turn the nutrients in organic material into a nutrient rich compost material, to improve soil quality
- Increase resource recovery, potentially, by a further 20% from existing recovery rates.

Localisation of infrastructure at SWMC will:

- Eliminate the need for long-haul transport of household recyclables/organics. This will:
  - Reduce transportation costs
  - Reduce related greenhouse gas emissions
- Potentially enable localisation of manufacturing supply chains that require material as feedstock, enabling a circular economy.

Challenge 2

Developing resilient local end-markets

Challenge	There are limited end-markets for low-quality recyclables in the region and nationally.
Opportunities	Investment in processing infrastructure that creates high-quality outputs is only the first step. CN will need to work with the market to align our recycled end-product with manufacturer specifications to ensure stable supply chains and catalyse growth in local manufacturing. Partnering with manufacturers could include the potential establishment of co-locating manufacturing businesses that use MRF output commodities such as glass beneficiation.

Challenge 3

Funding our future

Challenge	Access to appropriate funding and resourcing to achieve Federal and State targets and outcomes.
Opportunities	CN will need to explore a mix of options to strategically invest in infrastructure to support targets and outcomes. This will include: • Applying for State and Federal government grant funding • Offsetting investment costs by leveraging economies of scale of infrastructure increasing facility capacity, opening up opportunities for commercial and other customers to increase revenue. • Exploring a variety of operating models • Advocating for hypothecation of S88 Waste Levy back into waste and resource recovery infrastructure and activities.

Challenge 4

Meeting ambitious waste and recycling targets

Challenge	Waste and resource recovery targets set out in both Federal and State Government policies include: • Reducing total waste generated in Australia by 10% per person by 2030 • 80% resource recovery across all steams by 2030 • 50% reduction in organic waste sent to landfill by 2030. CN's current municipal recovery rate sits at around 40%. Our existing waste and recycling services will not achieve the Federal and State Government targets. To achieve an 80% resource recovery target additional innovative solutions will also need to be developed for streams that are traditionally difficult to recover.
Opportunities	The solutions CN will use need to be a combination of: • **Infrastructure and services:** ensuring the availability of infrastructure and services to allow for resource recovery and processing of high-value outputs • **Education and behaviour change:** an ongoing program to promote uptake and responsible use of the services available Expansion or consideration of new infrastructure and services include: • **Materials Recovery Facility:** processing yellow-lid recyclables with future potential to expand materials captured in the kerbside recycling, such as soft plastics, textiles, etc. • **Organics Processing Facility:** processing green-lid bin with plans in place to capture Food Organics. • **Tip Shop**: creation of a 'tip shop' to divert reusable materials and items from landfill • **Boutique resource recovery:** development of boutique resource recovery opportunities that would benefit from proximity to source materials, such as mattress recycling, e-waste recycling • **Energy from Waste:** understanding the role of Energy from Waste • **Bulk waste recovery:** improving resource recovery through our bulk waste collection service A comprehensive, data driven, targeted education and behaviour change program will need to be developed to ensure: • A more engaged community • Greater understanding and acceptance of the value of waste as a resource within our community, region and CN • Improved recycling and resource recovery • Decrease in contamination leading to higher quality MRF outputs • Ensure effective adoption of the FOGO service when introduced • Reduction in the generation of waste in the first place. **Collaboration with other Hunter Councils, Local, State and Federal Governments, industry experts, and universities to identify solutions and promote circular innovation is important.**

Challenge 5

Strategic direction and long-term planning

Challenge

The absence of a strategic framwork to inform long-term planning for Waste Services operations or the SWMC site has led to reactive delivery of services.

Opportunities

CN has an opportunity to leave a lasting legacy in waste and resource management for CN and the Hunter.

The development of key strategies and plans will provide direction and a long-term plan.

- 20-Year Strategy to set CN's waste direction
- Masterplanning of SWMC to consider:
  - Core infrastructure (red, yellow, green bin services)
  - Future landfill cell staging delivery
  - Potential locations for co-located infrastructure that would support SWMC's industrial ecology
  - Internal road network and additional weighbridges to separate HV and light vehicles to improve safety and efficiency
- Environmental Improvement Program: to ensure current and future environmental compliance of the site is met
- Buffer Management Plan: SWMC is suffering from urban encroachment. This may place limitations on future waste and recycling infrastructure to meet our community's needs.
- Renewable Energy Strategy for SWMC and Collections.

Challenge 6

Understanding customer expectations to deliver excellent customer service

Challenge

Without a good understanding of our customers' expectations we cannot provide excellent customer service.

CN has developed a Customer Experience Strategy for the City. However, this needs to be further developed for Waste Services due to the specific needs of our business operations and customers. Including, but not limited to:

- Collection services
- Council drop-off services
- Education programs
- SWMC services.

Opportunities

Establish a baseline and adopt a continuous improvement model for service levels for customers:

- Initial extensive consultation with our community and customers to develop an understanding of expectations which will lead to the development of service levels across all of Waste Services
- Regular surveys of our community and customers to determine satisfaction and whether we are achieving our agreed service levels.
- Digitise our services and ways of working to empower our customers and staff

Establish a Customer Survey Program:

- In addition to developing service levels and improving customer experience, the Customer Survey Program will seek out new and innovative service that anticipates and improves our customer's lives.

Improving customer access to, and experience at, SWMC:

- Determine feasibility and cost of improved logistics at site to reduce wait times to access services (including before the weighbridge or while on site)
- Investigate opportunities to improve customer experience on-site at SWMC through better signage, changed traffic conditions and site optimisation.

Review current bulk waste service to improve customer experience and meet expectations:

- Investigate feasibility of multiple passes for kerbside collection for pre-sorted loads, including scrap metal, e-waste, reusable items
- Investigate opportunities for, and feasibility of, reducing wait times for booked kerbside collection
- Increase resource recovery from bulk waste service through separated piles on the kerbside, sorting at the RRC and inclusion of a 'tip shop' at SWMC.

Challenge 7

Engaging all residents and customers to change behaviours

Challenge	Social research shows that, as a stand-alone tool, information is not enough to change behaviours for most people. It requires a multi-pronged approach using many different intervention methods.
Opportunities	Develop a comprehensive Behaviour Change Program that will support the delivery of our Waste Strategy by focussing on: • increasing resource recovery • reducing contamination across all waste and recycling streams • waste avoidance • improved environmental amenity through reduced litter and illegal dumping Improved monitoring and evaluation program, such as waste composition audits, will assist in monitoring progress and identify opportunities to tailor education campaigns that have the most impact for our community.

Challenge 8

Managing our high-risk operation proactively, rather than reactively

Challenge	Waste Services operates in a highly regulated environment due to the nature of its operations. Proactive management of the risks will keep our people (staff, customers, residents) and the environment safe.
Opportunities	Develop a culture that puts people and the environment first. This can be achieved through: • Continual review of operations to prioritise people and the environment. • Ensuring risk management systems that are in place are fit-for-purpose and well-adopted by the organisation. • Establishment of an ongoing Environmental Improvement Program that exceeds regulatory requirements and contributes to the long-term environmental protection and enhancement of the SWMC site.

Challenge 9

Fostering regional collaboration to create impacts at scale

Challenge	The average recovery rate for the Hunter Region is 43%. City of Newcastle and the region face similar waste and resource recovery issues around lack of infrastructure.
Opportunities	City of Newcastle can either invest in infrastructure to meet the city's needs or further investigate opportunities for regionally designed solutions. A regional solution can result in reduced lifetime cost to our residents for the service, improved localisation of output feedstocks, and overall improved environmental outcomes for the region. Ongoing consultation with Hunter Councils, the Hunter Joint Organsiation and regional industries is required to foster collaboration.

Challenge 10

Realising the potential of renewable energy generation and usage

Challenge	SWMC generates 7MW of energy. Further strategic planning around growth or usage of renewable energy will need to be undertaken.
Opportunities	Develop a Renewable Energy strategy to consider powering future SWMC infrastructure and collection operations (i.e. garbage truck fleet powered by renewable energy generated at SWMC). Review the feasibility of renewable energy solutions, such as Anaerobic Digestion, to complement existing and future operations, community sentiment and policy direction. Based on a community survey conducted in 2020, the community has been supportive of investigating green energy generation through the processing of organic material (i.e. AD). This supports the State mandate to reduce food organics from landfill by half and implement a FOGO solution to councils by 2030 and specific businesses by 2025.

Challenge 11

Optimising our systems and processes to maximise value for our customers

Challenge

Current systems and processes will require further investment to support growth and diversification of services in a sustainable manner.

The highest costs to Waste Services operations, against the DWMC, are:

- Collection services (40%)
- Paying the Waste Levy to EPA (22%)
- Processing of recyclables (15%), and
- Landfill disposal (14%)

This provides a valuable starting point in reviewing and optimising our operations.

Opportunities

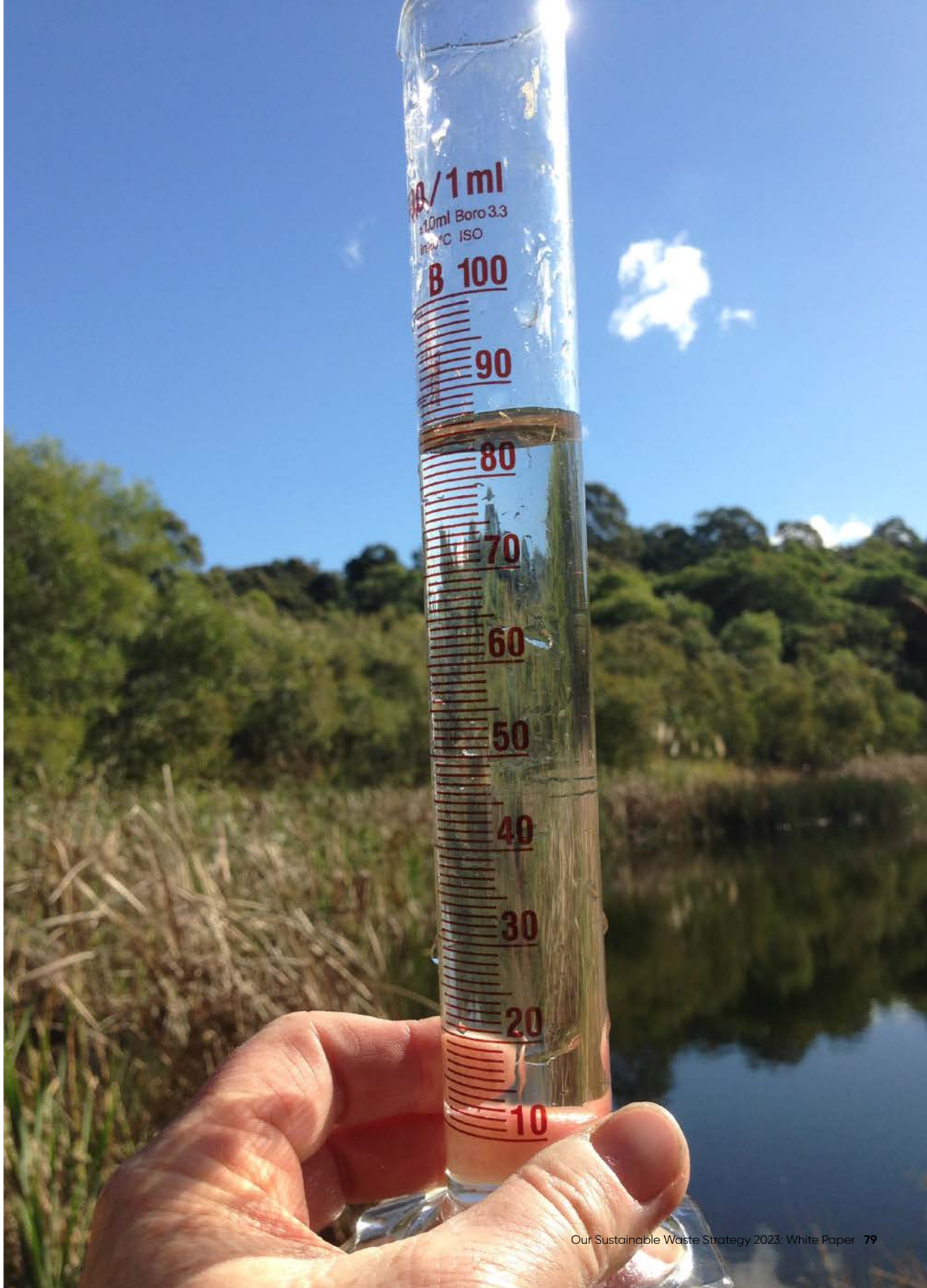
There is potential for optimisation of the delivery of our services by eliminating non-value-added activities. A non-value-added activity includes inefficient collection routes, equipment down-time at SWMC, or high administrative activities

Review the business to understand where operations can be optimised through:

- Operational improvement projects
- Modernisation of business systems
- Investment in new infrastructure

Potential areas include:

- Review and improve overall data management system within Waste Services to ensure appropriate data governance and intelligent business reporting. This includes the existing weighbridge system.
- Collections route optimisation program
- Fleet management system to ensure 100% uptime
- SWMC operational improvements at the landfill and RRC
- Reduce wait times at SWMC.



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Our SUSTAINABLE WASTE Strategy

Appendix 2
Delivery Plan

2023

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City of Newcastle

Our 4 year breakthrough goals

Review Period	Documents				
20 Years	Our SUSTAINABLE WASTE Strategy				
4 Years	**Delivery Plan** Cycle 1	**Delivery Plan** Cycle 2	**Delivery Plan** Cycle 3	**Delivery Plan** Cycle 4	**Delivery Plan** Cycle 5

Infrastructure

Implement core infrastructure to secure our kerbside recycling services – Material Recovery Facility and Organics Processing Facility

Food Organics

Introduce Food Organics as part of our residential kerbside collection

Performance

Improve our performance from baseline on Strategic Framework indicators

Waste Diversion

60% municipal diversion

Business Systems

Modernisation of our business systems

Engagement

Proactive engagement with our customers and community

Pillar 1

Planet

We value our community, protecting the earth and its finite resources

Priority 1

Community

An educated community who improves waste reduction and diversion by building an understanding and knowledge of the value of the materials they throw away.

Priority and Objective	Deliverable	FY22/23	FY23/24	FY24/25	FY25/26
1.1. Regularly engage with our stakeholders so that they are listened to and participate	Maintain an ongoing community survey program.	✓	✓	✓	✓
	Undertake direct community consultation to inform the design and delivery of any new/enhanced services.	✓	✓	✓	✓
	Establish a standard method for measuring the success of education communication and engagements.		✓		
1.2 Lead a long-term Behaviour Change Program to improve the diversion of waste from landfill	Enhance our targeted education initiatives to eliminate contamination from recycling and organics collected (households and businesses).	✓	✓	✓	✓
	Enhance our targeted education to residents on missed opportunity material from landfill collected (households and businesses).	✓	✓	✓	✓
	Develop and implement a litter and illegal dumping education, awareness, and enforcement program.	✓	✓	✓	✓
	Continue to collaborate with regional groups to provide business/residential waste education and engagement programs.	✓	✓	✓	✓
	Continue to promote local repair and reuse initiatives, including food rescue, while monitoring and publishing participation on an annual basis.	✓	✓	✓	✓
	Develop and provide education programs to have a focus of Multi-Unit Dwellings, student accommodation, renters and culturally linguistically and diverse communities.	✓	✓	✓	✓
	Continue to provide and develop further initiatives for targeted school and community engagements to provide education on waste management and the circular economy.	✓	✓	✓	✓
1.3 Regularly measure our community's impact and identify opportunities for improvement	Maintain an ongoing waste audit program for our kerbside (red, yellow, green bin), bulky waste services and public place bins.	✓	✓	✓	✓
	Maintain an ongoing waste audit program at SWMC including auditing material disposed at the landfill and Resource Recovery Centre.	✓	✓	✓	✓
	Develop and implement a plan for tackling material ending up in landfill (i.e. soft plastics, textiles) for residents and businesses, and work with stakeholders to identify and pilot innovative solutions.			✓	✓

Pillar 1

Planet

We value our community, protecting the earth and its finite resources

Priority 2

Environment

Zero harm to the environment by reducing pollution, taking a regenerative approach, and treating materials as resources.

Priority and Objective	Deliverable	FY22/23	FY23/24	FY24/25	FY25/26
2.1 Mitigate environmental impacts from managing all material streams received	Review and update the Environmental Management System.		✓		
	Deliver an Environmental Improvement Program at SWMC to proactively undertake works that lead to environmental improvements and a reduction in pollution, consistent with legislative obligations.	✓	✓	✓	✓
	Revise and update staged landfill closure and rehabilitation management plan.		✓		
2.2 Create and develop secure long-term local resource recovery options	Construct a fully enclosed Organics Processing Facility at SWMC to produce compost from Food Organics and Garden Organics.	✓	✓	✓	✓
	Implement a Food Organics recovery solution for Newcastle residents.			✓	✓
	Construct a Materials Recovery Facility at SWMC to service City of Newcastle mixed recycling (yellow-lid bin).	✓	✓		
	Construction of operational area at SWMC to relocate soil and aggregate processing, and bulky recyclables storage from the Organics Processing Facility future site.	✓	✓		
	Investigate a Tip Shop to recover any salvageable items destined for landfill.		✓	✓	
	Investigate secondary processing options and potential markets for downstream materials produced by the Material Recovery Facility including potential to use materials in civil and construction works.			✓	✓
2.3 Power future SWMC infrastructure and operations through renewable energy	Baseline our operational carbon footprint and monitor annually.		✓		
	Develop a Renewable Energy plan to grow renewable energy generation at SWMC and consider powering future SWMC infrastructure.		✓		
	Investigate renewable options to power Waste Services collection vehicles to reduce and remove the use of fossil-based liquid fuels in operations.		✓	✓	✓
2.4 Collaborate with other Hunter Councils, State and Federal Governments, industry experts, and universities to explore and promote circular innovation	Develop a prospectus for SWMC to highlight the site's strengths and potential for a regional resource recovery hub to attract circular innovation partners.			✓	✓
	Engage with other Hunter Councils, State and Federal Governments, industry experts, hospitals and universities through active engagement through industry events and working groups.	✓	✓	✓	✓

Pillar 2

People

We value our workforce to keep them safe, see them grow and create new opportunities

Priority 3

Safety

Providing a safe work environment for our staff, customers, and community with a culture of proactive improvement that will move us towards zero avoidable injuries.

Priority and Objective	Deliverable	FY22/23	FY23/24	FY24/25	FY25/26
3.1 Ensure a robust safety management system is in place	Review and update our Incident Management System and provide ongoing training.	✓	✓		
	Centralise our Risk Registers for all of Waste Services operations.		✓		
	Review fatigue break reporting for all Heavy Vehicle operations. Ensure processes are in place and adopted.		✓	✓	
	Review and update our fatality prevention protocols. Ensure processes are in place and adopted.		✓		
	Digitise prestart, inspection and induction processes across our collections and facility operations.		✓	✓	
	Conduct a safety audit to identify safety improvements.	✓	✓	✓	✓
3.2 Embed a Behavioural Safety Program to create an environment where safer choices become second nature	Design and resource a Behavioural Safety Program that is regularly monitored based on key safety indicators.		✓		✓
	Conduct behavioural observations and provide a feedback loop to staff to create behaviour change.			✓	✓

Priority 4

Culture

Making sure our people come first by ensuring we foster a capable, engaged, and positive workforce culture.

Priority and Objective	Deliverable	FY22/23	FY23/24	FY24/25	FY25/26
4.1 Build trust with our people by understanding their concerns and commitments, and providing regular two way constructive feedback	Conduct employee surveys to measure improvements in engagement and workplace culture.	✓	✓	✓	✓
	Create a learning culture by providing individual customer feedback to the staff member.	✓	✓	✓	✓
4.2 Continuously develop our leaders and teams to effectively utilise improvement systems, processes, and tools.	Support continual development of our staff by reviewing organisational skills and supporting organisational learning programs.	✓	✓	✓	✓
	Provide a service training program (soft skills, negotiation skills, and conflict management), to ensure our staff feel confident to engage customers in a friendly way, even when saying 'no'.	✓	✓	✓	✓
	Ensure regular performance huddles are conducted (by management through to the operators) to provide a quick and collaborative forum to review organisational performance.	✓	✓	✓	✓
	Engage staff in continuous improvement actions including skills development and team information centres.	✓	✓	✓	✓

Pillar 3

Prosperity

We will create enduring value for our community through our operations

Priority 5

Customer

Ensure the future of SWMC as a sustainable business through long-term financial planning, responsible decision-making and responsible investment.

Priority and Objective	Deliverable	FY22/23	FY23/24	FY24/25	FY25/26
5.1 Ensure our site and services can be effectively utilised by our customers	Review the design of the main entry/weighbridge to reduce wait times.		✓	✓	
	Review and redesign of landfill access roads to improve safe access during wet weather and reduce wait times for customers.	✓	✓		
	Review the weighbridge system and implement measures to improve data governance and the customer transaction experience.	✓	✓		
	Review and improve our customers experience on site with a focus on accessibility, way finding and traffic flow.		✓	✓	
	Develop a new access road to enter SWMC from the south, via Newcastle Link Road, to enhance amenity around Wallsend/Fletcher.	✓	✓	✓	
5.2 Digitise customer services to enhance and improve self-service capabilities	Investigate online and or mobile technology solutions to provide better resident access to waste management information and services.	✓	✓		
	Improve bulky waste voucher booking for residents and processing times at the weighbridge.		✓	✓	
	Enhance our business analytics capabilities. Review internal processes towards automation, to ensure easy and timely service request fulfilment.	✓	✓	✓	✓
5.3 Embed a customer-led culture through continual feedback and planning	Undertake an ongoing customer survey program.	✓	✓	✓	✓
	Review our customer management system and knowledge management tools to equip our people to help our customers.			✓	✓

Pillar 3

Prosperity

We will create enduring value for our community through our operations

Priority 6

Operational Excellence

Delivering our high-quality services to our customers through a commitment towards continual improvement of our systems and processes

Priority and Objective	Deliverable	FY22/23	FY23/24	FY24/25	FY25/26
6.1 Reliable and efficient operations by removing variation from our processes, making them absolutely predictable for us and our customer	Review and optimisation of the Business and Customer Support service to ensure operational excellence.	✓	✓	✓	✓
	Review and optimisation of the Collections service to ensure operational excellence.	✓	✓	✓	✓
	Review and optimisation of the SWMC Operations division to ensure operational excellence.	✓	✓	✓	✓
6.2 Strong data governance and intelligent business reporting by reviewing and improving our data management system	Review the EPA levy reporting process and implement measures for improvement.		✓		
	Review and improve waste data capture and reporting processes for landfill, kerbside collection and resource recovery.		✓	✓	
	Investigate and implement smart technologies that improve our service delivery, operational safety and/or environmental management.	✓	✓	✓	✓
	Review and improve the account verification process.		✓		
6.3 Embed a business system where culture, systems, processes, and infrastructure align to deliver continuous improvement and excellence	Adopt a lean operating system by training leadership on lean tools and techniques so they are able to lead by example.		✓	✓	✓
	Develop key performance measures and implement cascading visual performance management across all parts of the business to create alignment, focus, transparency, and accountability.	✓	✓		
	Review and update legal and compliance register.		✓		
	Establish quality control process to ensure standard operations across the entire business.	✓	✓	✓	✓

Pillar 3

Prosperity

We will create enduring value for our community through our operations

Priority 7

Financial Strength

Ensure our future and build a resilient, sustainable business through long-term planning, responsible decision-making and by being financially secure

Priority and Objective	Deliverable	FY22/23	FY23/24	FY24/25	FY25/26
7.1 The SWMC asset and operations will be protected to ensure we have a multigenerational asset for our community and customers through judicious planning and preservation	Develop masterplan for SWMC to transition the site to a regional Resource Recovery Hub.	✓	✓		
	Conduct a risk audit of climate change for SWMC.		✓		
	Review SWMC operating license against future operations and implement changes required.		✓	✓	
	Review and update the Asset Management Plan and Register to ensure fixed and mobile assets are adequately funded and maintained. Conduct and complete regular asset inspection, maintenance and renewal programs.		✓	✓	✓
	Design and construct of landfill Cell 9 Batter C.			✓	✓
	Create a landfill cell development progression plan including timeframes for design and construction to ensure availability at optimal time.		✓		
	Develop a buffer management plan to ensure current and future impacts of operations at SWMC are appropriately mitigated.			✓	
7.2 Partnerships, delivery models and funding opportunities will be explored and delivered based on greatest benefit our community and customers	Investigate and secure funding opportunities to support current and new opportunities.	✓	✓	✓	✓
	Review delivery models that will facilitate SWMC's future vision of being a Resource Recovery Hub to support the region.	✓	✓		
	Identify and investigate partnerships and business models that could create value-adding synergies at SWMC. Consider the potential of colocation of operations at SWMC.	✓	✓	✓	✓

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